BRAZIL: Subsea 7 S.A. announced an agreement with Petrobras to extend by one year the current long-term day-rate contracts for three pipeline support vessels (PLSVs) operating offshore Brazil. The extensions have a combined value of approximately USD $155 million, net of agreed reductions to the current day-rates, and increase the backlog relating to the four Brazilian PLSVs to USD $493 million. Marcelo Xavier, Vice-President Brazil, said: “These contract extensions reflect our long-standing relationship with Petrobras and desire by both parties to reach a mutually beneficial solution in these challenging times. We remain focused on performing safely and to a high standard for our valued client.”

UNITED STATES: The U.S. returned to being a net energy exporter in August despite disruptions from Hurricane Laura and ongoing uncertainty over the pandemic, according to data released in the American Petroleum Institute’s (API) August 2020 Monthly Statistical Report and Q2 2020 Industry Outlook. Higher demand and lower supply translated into lower crude oil inventories and further illustrated the gradual rebalancing of the market.

Los Angeles-based master distributor Industrial Valco (IV), which specializes in MRO same-day distribution, has announced the purchase of Beric Valves, a Houston-based producer of cast and forged steel gate, globe, check and ball valves, for the United States and its territories. “We are excited about the purchase of Beric Valves and adding them exclusively to our family of PVF products,” said Rob Raban, President of IV. “The acquisition will further our ability to provide high-quality valves at competitive prices. The PVF marketplace continues to demand better service and value from its suppliers and this acquisition will help the company fulfill its mission to do just that.”

In addition to the Beric Valve brand name, the purchase includes URL addresses, websites, social media accounts as well as trademark assignments. The Beric Valve website, www.bericvalves.com, will continue to operate separately to help with immediate FAQs and quotes, but will be under the leadership of IV’s team. “This is a game-changer for the company,” said Matt Arella-No, COO of IV. “We believe that Beric’s extensive and competitive product catalog coupled with IV’s strength in same day, MRO distribution give us a distinct competitive advantage to share with our customers. And we will be able to promote this advantage across all social media and online platforms.”

The purchase of Beric Valves will not change any of IV’s other valve relationships, which are focused on the AML marketplace. “IV serves both the approved and value ends of the marketplace, and we will continue to support our current vendor and manufacturing relationships,” Raban said. “We believe this purchase will further enhance IV’s ability to deliver value to our customers and further drive business across all product segments, including the AML valve segment.”

Baker Hughes to Sell Surface Pressure Control Flow Business to Pelican

Pelican Energy Partners LP has announced an agreement to purchase the assets of the Surface Pressure Control Flow (SPC Flow) business unit of the Oilfield Equipment segment of Baker Hughes. Pelican is working in cooperation with the management team of SPC Flow to carve-out the business unit as a stand-alone business wholly focused on providing pressure control products and services primarily in the U.S. with operations also in Australia, Papua New Guinea and Trinidad & Tobago. The business unit consists of wellhead product sales and service as well as a rental offering of frac trees, valves and zipper manifolds. Baker Hughes will retain the Surface Pressure Control Projects business, consisting of surface and subsea product offerings in the Middle East, Africa, North Sea and Asia. Pelican has signed a binding agreement to purchase the SPC Flow business unit, which is expected to close in the fourth quarter of 2020.

Managing Partner of Pelican Mike Scott stated: “This carveout transaction will enable the business to be a more focused, nimble and responsive company. We are glad to be supporting this management team that strongly believes that as a more entrepreneurial company, they will be better positioned to compete and win in these challenging markets.” Vice President of the SPC Flow business Rusty Justiss said: “This is an exciting opportunity and we are confident in our future as an independent company under Pelican’s ownership. This team is one of the most experienced wellhead teams in the industry. This transaction allows us to go back to our roots, centered around the legacy of Wood Group Pressure Control. As a focused company with an empowered and experienced workforce, we will serve our customers even better.”

MRO Master Distributor Industrial Valco Acquires Beric Valves

SPECIAL TOPIC – Cryogenic & Severe Services

Cryogenic valves must be designed to precise tolerances in order to safely and reliably contain cryogenically liquids and gases in applications that operate at extreme low temperatures.

Pages 4-5

EPC INTERVIEW

George Daniel has held many roles throughout his decades of work, giving him invaluable experience and transferable skills. He discusses his experience and the shape of the future of valves and his thoughts on good practices for engineering teams.

Pages 26-28

Valve World Americas | October 2020 • www.valve-world-americas.net
Paladon Systems was originally founded in 1981 as a job shop, or actuation integrator; it was not until 1999 that Paladon began manufacturing their own Scotch-Yoke actuators. “When we decided to start up our manufacturing operations, we had a well-known designer take over the task of designing the Paladon Actuator, which were created in our Borgonovo Val Tidone, Italy location,” said Brian Crook.

Paladon Americas is the newest addition to the Paladon Systems family with manufacturing based in Houston, Texas. The sistering company, established in 2011, holds the responsibilities of sales, service, and manufacturing for the United States, Canada, South and Latin America. For almost a decade, Paladon Americas has worked with resellers, distributors, and manufacturing representatives based on geographical location, to get their product to customers. “As we partner with a large number of people, we know we need to create value for our end users, but also for our distribution network,” Crook relayed. “We have a company ethos that drives our entire business: customer service. When we make sure our products are delivered on time to our customers, and meet the exact specifications they need,” relayed Crook. “Our Houston, TX facility builds scotch yoke, direct gas, hydraulic and electro-hydraulic, and complete turnkey packages for our customers in the Americas. Our Italy facility manufactures the complete product line, including parts, modules, and complete turnkey packages. The facility in the U.K. focuses on subsea, ASV, and specialty packages.” In all locations, the company builds High Integrity Pressure Protection System (HIPPS) and High Pressure Unit (HPU) packages as well.

The company’s focus has primarily been on the oil and gas industry, however, they have begun branching out into new markets, such as petrochemical, power generation, and mining. “We learn a lot from other industries, so we try to stay as diverse as we can. If you find yourself doing the same thing over and over, you will never learn anything new. Being adaptable allows us to convey new methods and practices for end users that may have crossed over from another industry.”

An Impressive Product Portfolio

Paladon Americas builds many styles of actuators, including the Pneumatic/Hydraulic Scotch-Yoke, Direct Gas Scotch-Yoke, Gas/Oil Scotch-Yoke, Electro-Hydraulic Scotch-Yoke, Self-Contained Hydraulic ESD, HPU and HIPPS packages, Pipeline Monitoring Systems, and Autonomous Solar and Wind Turbine Systems. In addition, the company boasts 80% of their final products are customized to customers’ specific requirements. In 2016, the Houston facility introduced their new Electro-Hydraulic Actuator and Control System. “We approached our customers, end users and operators, heard their feedback, and created this new system for them. We wanted to address the stigmas attached to most electro-hydraulic systems,” said Crook. “Examples of issues included leaking and difficulty setting the switches that will start and stop the motor.” Paladon was the first to introduce an on-board logic controller on the unit, which eliminates the need to use a limit switch to start/stop the motor. “We are able to provide valuable feedback to a control room, which features a low fluid level alarm, motor run protection, and valve jam/travel alarms. Our goal was to address industry problems, and build a smarter product that will not destroy itself if a single component fails.”

More recently, the company has begun an evolution of the EHYS-Series Electro-Hydraulic Scotch-Yoke actuators to include new features, such as autonomous operation, integrated pipeline monitoring, and solar and/or wind powered with a battery backup. Crook admitted, “We want to bring our product into a class of its own, and so we are raising the bar on features, delivery, and value for customers.”

The SCHY-Series Self-Contained Hydraulic ESD was also recently introduced. “This is a simple hydraulic scotch-yoke, but it does not require power. It uses a hydraulic hand pump to open/close a valve, and we can add in a high/low pressure pilot, solenoid or limitswitch, which makes the unit a completely autonomous shutdown system,” stated Crook.

For each facility and product line, Paladon has obtained a wide range of certifications to ensure high quality products for their customers. The company’s manufacturing facility in Italy just received ISO 14001:2015 and ISO 45001:2018 approval by Lloyds Register. They have also held ISO certification for over 20 years, and maintain Lloyds Low Temp to -85F, IP66, ATEX, PED, SIL3 and ISO-5211 certifications.

Through innovations and partnerships with companies like Paladon Americas, we can help users pave the way to the future.”
Innovative Solutions for Industry

Over the next year, Paladon Americas will be rolling out several new technologies, including Solid-State Electronics, LTE-M Cellular technology with GPS, MQTT, TLS encryption, remote control, web-based IoT cloud control, customer cloud, and SCADA control. “We are also partnering with solar power and battery manufacturers to deliver the latest advances in each technology,” Crook explained.

Providing Exceptional Service
To ensure the customer is left with a great first impression, Paladon offers new customers a free start-up and commissioning of their products. “We have built our business around serving the customer, so we make sure they are given a memorable experience that makes them want to work with us in the future,” said Crook. Paladon Americas also has a service truck with the ability to lift up to 2500 lbs, a reach of 30 feet, an onboard Miller Welder, an 11,000 watt generator, a high-volume air compressor, booster tanks, features 4-wheel drive, and Wi-Fi/Wireless crane controls. “For us, building a quality product is one part of the equation, and proper service is the other.”

The Company That Can
Paladon Americas has quickly earned a reputation for being the company that can. “We are recognized by industry professionals for not only our product quality and value, but also for providing solutions. Internally, we like to call it the ‘Paladon Difference,’” admitted Crook.

The ‘Paladon Difference’ begins with offering a standard configuration to start. As the company uses a lot of modular components on their actuators, they can easily upgrade or change out certain parts to make a customized unit. Crook continued, “Being able to quickly swap out one component for another allows us to meet any short deadline.” Paladon also keeps a large stock inventory, so customers will not have to wait on missing parts.

Traceability is also an important aspect of their operations. Every quote is sent to the customer with an ISA style quote form, a brochure, topworks dimensions, and standards. Every order ships with a serial number and the customer purchase order number (PO#) on the IOM. All electrical units ship with the customer specific wiring diagram.

Crook explained, “We also track who built each unit to ensure accountability, quality and consistency. For our electro-hydraulic units, the program logic is serialized and stored on a local server for quick internal access.”

Emerging Innovations and Industry Changes
Paladon is constantly researching new technologies, building prototypes, and testing product changes. “For us to be the very best, we must push ourselves to excel at a higher level,” said Crook. “We do not sit back and rest on a single accomplishment, we are always innovating.”

To remain a technology leader, the company must continuously update their products and processes. Without these updates, things become stale, and ideas become worn out or overused. Crook continued, “Our mission will always be to serve the customer, and that means we need to not only keep up with what the industry needs, but also do our own research so we can be the first to provide it.”

A recent shift to digitized and automated processes is evident in industry. Crook believes that Paladon will be able to meet this new need as they have the ability to bring together renewable energy, fugitive emissions reduction, and past technologies to redefine future standards of the industry. He said, “At this moment, our industry is having to find ways to do more with less. Through innovations and partnerships with companies like Paladon Americas, we can help users pave the way to the future.”

Looking Ahead
Paladon sees many positive changes and growth in the company and their business in the coming years. Recently, they were awarded a global hydrogen facilities project, and were shortlisted for a new global LNG project. “The market is extremely competitive right now, and we are working towards being the leader at a time when the status quo is just not good enough. We work for the customer and their needs, which means we are responsive, consistent, and transparent; we ask the right questions, and we provide affordable solutions with short lead times,” Crook stated. “We have a lot of work ahead of us, but through leadership, a defined strategy, and a team of people working together, we expect our growth to continue. We are working hard to get in front of the end users, gain their trust, and prove the ‘Paladon Difference.’”

For more information on Paladon Americas and their innovative approach to valve automation, please reach out to them at 888-593-0757 or their website www.paladonamericas.com.

“The views and opinions expressed in this article are those of the profiled company and do not reflect the position of Valve World Americas.”

Brian Crook

www.valve-world-americas.net • October 2020 | Valve World Americas
An Introduction to Cryogenic Valves

Cryogenic valves safely transport and assist in containing cryogenic liquids and gases in applications that operate at extremely low temperatures. Cryogenic valves must be designed to precise tolerances and be of an extremely high quality in order to safely and reliably contain these cryogenic liquids and gases.

By Arie Bregman – DFT Valves

Applications across many industries rely on valves specifically designed for cryogenic applications to maintain the safe handling of extremely cold liquids and gases. Equipment in refrigeration, air separation, chemical processing, medical and food processing fields all use cryogenic valves for purposes central to these industries’ functions.

In this article, we explore some of the key points of specifying cryogenic valves, as well as discuss some of their common applications in industry.

Where Do Cryogenic Temperatures Begin?

Air Separation and gas industry standards generally specify that cryogenic temperatures to be at or below −150°C (−238°F). Temperatures above this range up to 3°C (37°F) are referred to as “refrigeration” temperatures. However, sometimes a more rigid approach to cryogenic applications is followed, and continuous temperatures below −73°C (−100°F) are seen as cryogenic operating conditions.

No matter these specifications, all cryogenic applications require specific valve design, testing, and preparation.

Gases liquefy at different temperatures. For example, nitrogen, an inert gas, liquefies at a temperature of −196°C (−320°F). In contrast, hydrogen, a flammable gas, liquefies below −253°C (−423°F), making it useful for different applications. All gases have their own, unique liquid transition temperatures.

Cryogenic temperatures are usually expressed in terms of Kelvin units. 0° Kelvin is equal to −273.15°C (−459.67°F), and is referred to as absolute zero (the temperature at which all molecular activity stops). The Kelvin scale correlates exactly with the Celsius scale by just a difference of 273.15; therefore, 100°K is equal to −173.15°C.

Materials of Construction

In-valve operating temperatures below −40°F require special design considerations, such as the selection of appropriate materials for valve construction. Most carbon steels, such as the casting grades WCB, WCC, and WC5, are too brittle for use in continuous temperatures below −20°F. Low-carbon steels like LCB and LCC are only effective down to −40°F.

For temperatures lower than −40°F, many engineers make use of austenitic stainless steels, which contain high levels of chromium and nickel and low levels of carbon. Austenitic steels are more ductile, easily weldable and suitable for many cryogenic temperature applications.

Polymers, rubber compounds, and other soft materials that are typically used for seals or seals can become excessively hard in cryogenic conditions, causing them to function more like metals than elastomers or polymers. Valve designs that include external stems (and hence stem seals) such as ball, butterfly, gate or globe valves must also incorporate an extension to the bonnet to move the stem seals to a warmer area. Doing so will remove the seals from direct cryogenic liquid contact and work to preserve their elasticity and pliability.
Stem extensions are required for both manual and automated shutoff valves. The valve operator will also have seals or include greases that will be negatively impacted by the cryogenic temperatures and therefore must be above the pipeline insulation or outside of the cold box enclosure to ensure continued usability.

Piping systems require a lot of welding. Typically low-carbon grade metals such as 316L (extra-low carbon) stainless steel are specified for the components that will welded. This low carbon specification will include piping flanges as well as the body materials for the valves to be used.

Special Cleaning/Concerns

Special cleaning is required to clean cryogenic valves and piping. This cleaning process is designed to remove oils, greases, and fibers, which may interfere with your system’s functionality or present a flammability hazard depending on the service.

After washing the valve’s component parts in a solvent cleaner, workers must inspect them for any residues the cleaning procedures may have missed. In most cases, the valves and pipes should not contain any assembly greases or oils, although there are some approved lubricants for oxygen service components that will not harm the system with their presence.

Some customer specs may not allow for the presence of any lint or fibers within the valve. Even if some fiber is allowed, no system should contain fibers greater than 1/8” (3 mm) in length. In oxygen systems, the presence of lint can be quite problematic due to the risk of flammability. It is critical to thoroughly inspect all the components that go into the system to make sure they are free of any and all contaminants. Black light testing allows inspectors to easily identify lint, fibers, or other residue that needs to be removed.

Another concern related to cryogenic valves is leakage, both internal and external.

- Internal leakage is a function of the valve’s design, and the seating components of the valve need to be designed to seal properly at extremely cold conditions. Creating an effective, durable seal under cryogenic operating conditions is the main function of the valve and is required to maintain your system’s safety and operating efficiency. The seals should be constructed to provide a durable and reliable closure over the course of their expected service lifetime.
- Most external leakage will come from the valve stem, however the presence of flanged connections can increase the opportunities for external leakage to occur. To minimize this, opportunities for external leakage, many companies specify weld end connections for their valves. These welded valves will include butt welding ends or socket welding ends on the valves, depending on the size and pressure class of the valves.

Cryogenic Applications

Valves built specifically for cryogenic environments can be used in a wide range of applications, such as:
- Air separation (nitrogen, oxygen, hydrogen, helium, argon, and carbon dioxide gases);
- Aerospace applications;
- Medical research;
- Super conductivity research and applications.

ABOUT THE AUTHOR

Arie Bregman is Vice President and General Manager for DFT Inc., located in Exton, Pennsylvania, U.S.A. Arie has spent over 35 years in the valve industry, with companies such as Nitco, Jamesbury and Neles. Arie holds a Master of Science degree in Mechanical Engineering from Worcester Polytechnic Institute. He is active in the Valve Manufacturers Association (VMA) in the U.S., serving on the Education and Training and the Technical Committee and is also the Chairman of the VMA Board of Directors.
Waste to energy is an exciting and rapidly developing waste to energy sector across all industries, and they are focused on automation and engineering solutions to manage waste as a source of renewable energy. 'Contaminant' gases, which is widely used as a source of renewable energy.

Orbinox specializes in providing valve, and biogas markets and have a large installed base in plants worldwide with solid references from most of the major technology providers.

Orbinox EB Series to Meet the Demanding Applications

The Orbinox EB model knife gate is a bi-directional valve designed for general industrial service applications. The design of the body and seat assures non-clogging shutoff on suspended solids. The bi-directional EB model, with its vulcanized Nitrile (or EPDM) seat and zero body cavity, has proven to be a great knife gate valve in the market for anaerobic digestion (AD).

AD is a collection of processes by which micro-organisms break down biodegradable material in the absence of oxygen. The process is used for industrial or domestic purposes to manage waste and/or to produce fuels. The process produces a biogas, consisting of methane, carbon dioxide, and traces of other 'contaminant' gases, which is widely used as a source of renewable energy.

Orbinox specializes in providing valve, automation and engineering solutions across all industries, and they are focused and motivated by the continuously developing waste to energy sector. Waste to energy is an exciting area as the economic, agronomic and environmental advantages and benefits are great. Orbinox has extensive experience in supplying valves to AD and biogas markets and have a large installed base in plants worldwide with solid references from most of the major technology providers.

ValvTechnologies Integrates Augmented Reality Tool To Provide First-Class Remote Service Support

ValvTechnologies has introduced VirtualValv Support™, an on-demand augmented reality tool to provide remote installation, maintenance support service, anytime, anywhere.

The effects of the COVID-19 pandemic have placed significant limitations on in-person interaction. To overcome this, ValvTechnologies has implemented an innovative software tool for live remote service assistance. VirtualValv Support™ connects a certified ValvTechnologies’ service technician with on-site, field personnel to interact in real-time, communicating with hand gestures and augmented 3D scans.

VirtualValv Support™ was recently deployed for a planned maintenance outage at a powerplant in Malaysia.

The outage was originally scheduled to be conducted by its service team based in Chennai, India, however, as air travel had been restricted, ValvTechnologies had to adapt to meet its customer’s needs. As a result, the VirtualValv Support™ system was sent to Malaysia and programmed with all the necessary procedures for full ERV overhaul and the service team in India overwatched the repairs remotely to ensure the work was done to standards. “Our service team was in sync with the plant’s field personnel,” said Indrajith Vijayakumar, Business Development Manager, Asia Pacific. “We provided real-time maintenance and support from equipment training to assembly, streamlining the process as if we were physically there.”

“During these uncertain times in which social distancing and travel restrictions are being mandated across the globe, it’s imperative that we find alternative means to support our customers to ensure the safety and efficiency of their operations,” said Bill Morris, ValvTechnologies’ International Service Manager. “By utilizing cutting-edge technology, ValvTechnologies and its customers can collaborate on troubleshooting valve maintenance or repairs to avoid costly downtime.”

DFT’s Sanitary Check Valves for 3A & CIP

The DSV® Sanitary Check Valve is an in-line spring-assisted check valve designed to prevent flow reversal in industries that have strict cleanliness codes. To accommodate various piping arrangements, this sanitary check valve is available as a vertical or horizontal valve.

The horizontal valve is for horizontal lines requiring self-draining. The vertical design is for vertical and horizontal installations when a self-draining valve is not required. The valve has a 316L stainless steel body and seat, 32 Ra internal finish, and is fastened with a quick release clamp and an elastomeric body seal to permit fast and easy access to the internals. The disc and seat are hand lapped to provide an excellent shutoff.

Additional features of the DSV® Check Valve include:
- Meets 3-A Sanitary Standards;
- Clean-in-place (CIP) valves.

Engineered Valves Releases New Valve Sensing Platform

ITT Engineered Valves has introduced its Integrated Sensing Platform (ISP), a valve sensing platform developed to monitor valve position. With advanced capabilities in calibrating, operating and communicating with diaphragm valves, the ISP reportedly offers customers a reduced piping footprint, abbreviated set up time and simplified operation.

The ISP app will allow customers to remotely calibrate and operate their valves through a series of steps on an iPhone or iPad. The app offers users the ability to track valve performance over time and to log specific valve information and maintenance history. The information is easily accessed and reviewed via the app.

The ISP sensing module is integrated with the patent-pending valve actuator to offer a compact assembly, up to 70% shorter than currently available assemblies. The non-contact sensing technology provides accurate and repeatable valve position feedback with no moving parts to wear. Calibration of the device is fast and simple, whether utilizing the external magnetic dongle or with the new ISP app.

Other features of the ISP include an ultra-compact design, automatic calibra- tion, a diagnostic option, an internal solenoid option, magnetoresistance sens- ing, multiple output options, high- visibility position indication, sealed, pot- ted electronics, an observation window and more.
pneumatic valves, control systems, and Air Balancers applications for the original pendant product offering. Established in 1921, ROSS is headquartered in Troy, Michigan, and is ISO certified. ROSS designs and manufactures lever stroke for improved operator control. The VIP EVO incorporates all the features that the VIP series offers, while enhancing the valve and making it suitable for applications up to 40 bar. The valve also has a high reliability over a high number of cycles and significant energy savings due to less compressed air use, confirming the green spirit of the company and environmentally conscious design of its products. The compact design of the VIP EVO helps to reduce the use of space in the plant—and consequently the cost—combining the fluid shut-off and the pneumatic actuation functions in a single device of limited size. The VIP EVO is designed, produced and tested entirely in OMAL’s factories, proudly made in Italy.

Versa Introduces 3D CAD Downloads for V-Series Valves

Versa Products, a manufacturer of pneumatic and hydraulic control valves for automation systems, has introduced an all-new 3D interactive CAD download capability on their website. Built by CADENAS PARTsolutions, the tool enables design engineers to gain instant access to necessary information and CAD models for V-Series directional control valves, adding accuracy and accelerating design cycles for manufacturers specifying these components. Versa Products is well-known for V-Series brass directional control valves, which are versatile and rugged, standing up to years of heavy use in the toughest environments around the world.

“Our V-Series modular brass directional control valves are used in a host of applications. Now, we are expanding our services with digital delivery for product data and we know our engineering customers will be excited,” said Jan Larsson, President and CEO at Versa. In the past, engineers contacted Versa through phone and email, or made contact through a distributor to get information and CAD models for Versa products. Now, engineers can configure a V-Series valve online, get detailed information, preview the part in an interactive 3D viewer, and download in the CAD format they need. Larsson added, “this new system is all about self-service. We want engineers to have instant access to the information they need so they can focus on the important work that needs to be done.”

ROSS CONTROLS Announces Pendant Control Valve Expansion

ROSS CONTROLS announced the addition of High Flow Pendant Valves with optional Protective Covers. The new pendants have a wider range of valve/lever stroke for improved operator control. The new Pendants are designed for use with Air Hoists, Air Motors, and Air Winches in comparison to Lift Assists and Air Balancers applications for the original pendant product offering. Established in 1921, ROSS is headquartered in Troy, Michigan, and is ISO certified. ROSS designs and manufactures pneumatic valves, control systems, and is universally recognized as a global leader in fluid power safety solutions and poppet valve technology. ROSS provides standard products and customized ROSS/FLEX® solutions for machinery and automation. Selling to original equipment manufacturers and end-users throughout the world, ROSS reaches its global customer base through manufacturing and distribution facilities located in the United States, Germany, France, United Kingdom, Japan, China, Brazil, India, and Canada. In addition to its direct sales team, ROSS markets its products through a worldwide network of more than 100 distributors.

The new VIP EVO, with its exclusive design by Giugiaro, incorporates cutting-edge manufacturing and technological solutions to meet the ever-evolving performance requirements of the world’s industrial applications. The development of this new solution is the natural follow-up to the VIP valve (PN10), which is still one of OMAL’s best-selling products. The VIP EVO incorporates all the features that the VIP series offers, while enhancing the valve and making it suitable for applications up to 40 bar. The valve also has a high reliability over a high number of cycles and significant energy savings due to less compressed air use, confirming the green spirit of the company and environmentally conscious design of its products. The compact design of the VIP EVO helps to reduce the use of space in the plant—and consequently the cost—combining the fluid shut-off and the pneumatic actuation functions in a single device of limited size. The VIP EVO is designed, produced and tested entirely in OMAL’s factories, proudly made in Italy.

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OMAL SpA Expands Range of Axial Valves with VIP EVO

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“Our V-Series modular brass directional control valves are used in a host of applications. Now, we are expanding our services with digital delivery for product data and we know our engineering customers will be excited,” said Jan Larsson, President and CEO at Versa. In the past, engineers contacted Versa through phone and email, or made contact through a distributor to get information and CAD models for Versa products. Now, engineers can configure a V-Series valve online, get detailed information, preview the part in an interactive 3D viewer, and download in the CAD format they need. Larsson added, “this new system is all about self-service. We want engineers to have instant access to the information they need so they can focus on the important work that needs to be done.”

ROSS CONTROLS Announces Pendant Control Valve Expansion

ROSS CONTROLS announced the addition of High Flow Pendant Valves with optional Protective Covers. The new pendants have a wider range of valve/lever stroke for improved operator control. The new Pendants are designed for use with Air Hoists, Air Motors, and Air Winches in comparison to Lift Assists and Air Balancers applications for the original pendant product offering. Established in 1921, ROSS is headquartered in Troy, Michigan, and is ISO certified. ROSS designs and manufactures pneumatic valves, control systems, and is universally recognized as a global leader in fluid power safety solutions and poppet valve technology. ROSS provides standard products and customized ROSS/FLEX® solutions for machinery and automation. Selling to original equipment manufacturers and end-users throughout the world, ROSS reaches its global customer base through manufacturing and distribution facilities located in the United States, Germany, France, United Kingdom, Japan, China, Brazil, India, and Canada. In addition to its direct sales team, ROSS markets its products through a worldwide network of more than 100 distributors.

Versa Introduces 3D CAD Downloads for V-Series Valves

Versa Products, a manufacturer of pneumatic and hydraulic control valves for automation systems, has introduced an all-new 3D interactive CAD download capability on their website. Built by CADENAS PARTsolutions, the tool enables design engineers to gain instant access to necessary information and CAD models for V-Series directional control valves, adding accuracy and accelerating design cycles for manufacturers specifying these components. Versa Products is well-known for V-Series brass directional control valves, which are versatile and rugged, standing up to years of heavy use in the toughest environments around the world.

“Our V-Series modular brass directional control valves are used in a host of applications. Now, we are expanding our services with digital delivery for product data and we know our engineering customers will be excited,” said Jan Larsson, President and CEO at Versa. In the past, engineers contacted Versa through phone and email, or made contact through a distributor to get information and CAD models for Versa products. Now, engineers can configure a V-Series valve online, get detailed information, preview the part in an interactive 3D viewer, and download in the CAD format they need. Larsson added, “this new system is all about self-service. We want engineers to have instant access to the information they need so they can focus on the important work that needs to be done.”

Ross Controls Launches Lifetime Management Services

The new Lifetime Management service changes the way that Rotork Site Services (RSS) operates, with a stronger focus on ensuring the most appropriate response based on the criticality of the customer’s application. The new four-tiered approach – Health Checks, Planned Maintenance, Enhanced Warranty and Predictive Maintenance – identifies the unique needs of a customer and provides appropriate support. A Health Check assesses actuator asset condition relative to design specification and operational use. Through this the condition of current assets and an appropriate maintenance plan can be identified moving forward.

The Planned Maintenance tier encompasses thorough, intrusive product inspections and pro-active repair management. Additionally, Planned Maintenance provides access to spare parts as part of Rotork’s obsolescence program. Enhanced Warranty provides an extended warranty period and condition-based monitoring. This encompasses at least two Health Checks a year and a review of historic performance, obtained through data logger interrogation. The final tier, Predictive Maintenance encompasses everything that the previous tiers provide, with the added provision of identifying potential problems before they are able to manifest. Data logger records are compared through machine learning and the patterns which occur prior to failures are identified. If these patterns are later identified within functioning actuators, we work with customers to proactively implement mitigation plans.

Dave Godfrey, Rotork’s Services & Aftermarkets Product Manager, commented: “Lifetime Management centers around maximizing process uptime and asset availability for our customers. The different levels of support on offer allow our customers to mix and match in order to design a truly bespoke level of support to best match their individual site needs.”

SVI3

Next Generation Digital Valve Positioner

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The third generation Baker Hughes Masoneilan™ SVI™ is a user-friendly digital valve positioner for pneumatic control valves. Utilizing advanced control and diagnostic algorithms, along with field-proven non-contact position sensing technology, the SVI3 delivers accurate, responsive, and reliable positioning performance.

For more information, contact your local Baker Hughes representative or visit valves.bakerhughes.com

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Neway Successfully Launches E-Learning Platform

Neway Valve Co. has officially held a kick-off meeting for its new e-learning platform: Management representatives of the Neway Valve Division, Neway International Business Division, Neway Industrial Material Division, Neway Oil Equipment Division, in conjunction with all functional departments, attend the meeting.

Neway is committed to training development and strives for excellence in every step of helping employees learn and develop new talents. The Neway e-learning platform promotes internal talent training to a higher level. Systemically building learning organization and smart enterprise is a strategic component of Neway's sustainable development plan. The launch of the new e-learning platform demonstrates the company's commitment to employee training and development. The platform provides complete useful functions such as business management skills, product knowledge, points ranking, diversified training modules making, technical expert Q&A, etc. Encouraging continuous education through online knowledge sharing and cross-functional communication among employees will help to systematically develop the talents of staff and gives everyone a platform to demonstrate their global work experiences for the development of all, which fully embodies Neway's core values: respect the realization of employees' self-worth.

Rawson/Industrial Controls Adds Flowserve as Texas Distributor

Rawson/Industrial Controls, an ERIKS North America company, announced an agreement with Flowserve, a leading provider of flow control products and services for global infrastructure markets, to offer its full line of high-end valves and actuation products throughout the state of Texas. As a result of the agreement, Rawson/Industrial Controls customers throughout Texas will now have access to Flowserve's limitoronic electronic and pneumatic valve actuators, PMV valve positioners, Atomac lined valves, Durco valves, McCanna and Worchester Controls ball valves.

David Wilken, Vice President, Rawson/Industrial Controls, said the companies' combined strengths greatly expand customer access to advanced valve products and technical expertise. "We are honored to be strategic partners in the Lone Star state with such a well-respected valve company," he explained. "Together, we will be full-solution providers for valves, instrumentation, fittings and manifolds, complete with full valve automation solutions. On the technical side, customers will be able to take advantage of our co-engineering and problem-solving capabilities, as well as other specialty technical services. All of this will be backed by the experience and support of a dedicated valve quote team and one of the largest and best equipped valve automation shops in the Gulf Coast."

Daniel Dillon, Regional Sales Manager, Southeast, Flowserve U.S., said he was excited about the new agreement. "Customers always appreciate suppliers that can deliver proven, integrated solutions to the challenges they face every day. Between our two companies, we can help meet their product and technical service needs with a single phone call or email."

Ferguson Waterworks Named AVTTM Trusted Distributor

Advanced Valve Technologies (AVTTM) has strengthened its established relationship with Ferguson Waterworks. The company has entered into a distributor and installer agreement covering the Arizona and New Mexico regions of the United States.

Ferguson Waterworks has been working with AVT, a manufacturer of insertion valves, for eight years. The company has successfully installed more than 200 4" to 12" AVT EZ Valves across a range of materials: underground line stopping solutions on DI AC and C900 pipelines. The company has also completed several large-scale installs including a 20" EZ Valve installed on a ductile iron line. This line controlled the flow of a one-million-gallon water tank that fed 32 homes in the Rio Rancho region of New Mexico. Installing the EZ Valve under pressure meant the residents did not face having their water turned off. As part of the agreement, three technicians, who were already experienced in the installation of the smaller AVT EZ Valve, were trained to install the valve which is designed to last for decades. This enhanced partnership means Ferguson Waterworks now has highly experienced teams trained to install the full range of AVT EZ Valves. They will have increased access to valves and install kits meaning they can respond to the need of the cities they service even quicker.

Rupture Disc Manufacturers Elfab and Oseco Combine Forces to Create Global Pressure Safety Business

Oseco, based in Oklahoma and Elfab, based in Newcastle upon Tyne in the U.K., have formed a combined company to better serve global customers and offer an expanded product portfolio. The combined business is called Oseco-Elfab, and is supported by two manufacturing locations, six regional sales offices and over 30 approved representatives worldwide.

Companies requiring pressure safety products will benefit from a wider choice of solutions, price synergies, expedited logistics, greater local support, and access to a larger team of pressure management experts for tailored product designs, support services and training.

Kevin Kolbeck, Interim President of the combined business, said: "Elfab and Oseco have been part of the Halma Group for 21 years. We have united the businesses in order to best serve customers on a worldwide scale. Oseco-Elfab places the customer at the nucleus of everything we do, from consultation and bespoke product manufacturing to ongoing support and training. The combined company is larger, more flexible and offers a broader product portfolio that incorporates both the Elfab and Oseco brands. I look forward to watching the business flourish as we serve our existing customers more efficiently, while also growing our global customer base."

As well as operating under the name Oseco-Elfab, the company has a new logo that combines both the Elfab and Oseco brands and provides a clear visual identity for new and existing customers.
MOGAS Wins Multimillion Dollar Bid to Supply Valves for Southeast Asian Refinery

MOGAS Industries, Inc. (MOGAS) recently received a multimillion-dollar order to manufacture several hundred severe service isolation valves with actuation from a large refiner in Southeast Asia. Several processes and applications will be serviced with the valves from the order, including the ebulliating bed unit comprised of high pressure letdown isolation, catalyst isolation and many high cycle, thermal shock applications. Delivery of these valves is scheduled through next year to meet the customer’s requested timeline. This order further solidifies MOGAS’ vision to become the world’s dominant severe service technology company.

As a global leader in heavy oils processing, MOGAS has a long history of partnering with customers to ensure that every requirement and spec are met to ensure the client’s peace of mind. MOGAS’ Global Sales Manager, Chuck Walker, noted the customer’s “insistence on high technology quality components for their CLG licensed project will shine as a first-class showplace in the heavy oils industry.”

This order contributes greatly to MOGAS’ stronghold on the heavy oils industry and expands our reach in the Asian energy markets. The value of this dynamic partnership will continue to be realized throughout each phase, from installation to service. MOGAS is known for supplying critical valves for safety and enhanced plant efficiency to help our customers realize their highest potential while maximizing their profits.

Rotork Intelligent Electric Actuators with Gearboxes Used to Provide Flood Protection in Texas

MOGAS, the design, engineering, manufacturing and service technology company, is pleased to announce the order of several hundred letdown isolation, catalyst isolation and severe service isolation valves with actuation for a major refinery in South America. These valves will allow the client to close the gates and seal the development. As the surrounding development is very flat, possible flooding can occur when water can flow into the river. When this happens, the runoff water is then pumped away over the top of a nearby levee, allowing it to eventually run back into the river.

The installation of the actuators helps to ensure that the people of this community remain safe from the damage which could otherwise be caused by water infiltration into the development. Rotork Site Services was responsible for commissioning the actuators with gearboxes and the start-up, ensuring that all products were fully operational.

Intelligent electric IQ actuators were chosen for this application due to the remote location of the sluice gates, which would have prohibited an hydraulic or pneumatic solution. Additionally, the close proximity of an electrical generator meant that a power supply was readily available.

Rotork’s IB gearboxes are suitable for use on sluice gates and for the most demanding motorized applications. They’re made with cast steel and when combined with the IQ actuator they can reach a torque of up to 40,000 Nm (32,452 lbf.ft).

New JIP33 Specification Released: Subsea Pipeline Valve

The International Association of Oil and Gas Producers (IOGP) Joint Industry Program (JIP33) has published S-708 Subsea Pipeline Valves. This specification defines a common set of requirements for the procurement of subsea pipeline valves in accordance with API Specification 6DSS, Specification for Subsea Pipeline Valves, Third Edition, August 2017, including Addendum 1, April 2019 for application in the petroleum and natural gas industries. Phase 3 was launched in January 2019 with 12 major oil and gas operators participating to develop specs available to the public. The Phase 3 specs were launched in collaboration with Aker Solutions.

“Another big milestone for JIP33. S-708 Subsea Pipeline Valves is the 10th JIP33 specification that was developed as part of Phase 3 of the program. The constructive collaboration of the experts of our 12 sponsors is amazing. Not to mention all the feedback we have received from manufacturers, suppliers and our EPC partners. We have seen a real mind set shift in the past few years, from keeping the know-how and expertise close to our chest, we have moved to sharing technical experience and insights for the good of the Oil & Gas sector,” said Adria Postema, Director of the JIP33 program.

“I have worked with several of the experts before on other JIP33 specifications”, added Rachel Manley, Project Engineer for Aker Solutions. “I know that it will not always be easy to get consensus. But they all do see the need for our industry to drive harmonization of our industry standards. I feel proud to be part of this program.”

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KROHNE Announces Chris English as New Vice President of Sales

KROHNE, a world-leading manufacturer and supplier of solutions in industrial process instrumentation, announced that Chris English has been hired as the company’s new Vice President of Sales for the U.S., Canada, Mexico, Central America, and the Caribbean. English brings extensive experience in the process control instrumentation market to his new role at KROHNE.

English has worked for several of the top companies in the process control instrumentation market over his 27 years in the industry, and has experience with process control and automation in nearly all sectors of the market: oil and gas, pulp and paper, metals and mining, water and wastewater, food and beverage, and more. In his new role at KROHNE, he holds responsibility for both sales and marketing for the NAFTA region, including managing the company’s regional sales force.

“Chris’ experience working in sales and management for process control instrumentation market leaders is a huge asset to the KROHNE team, one that we are confident will benefit our customers throughout the region,” said Richard Hendgen, Chief Executive Officer, KROHNE. “His expertise in managing sales forces and defining market strategies at a national scale, as well as his sales knowledge across numerous market sectors, make him an excellent fit at KROHNE.”

In a prior role as Vice President of Sales, English was responsible for leading Direct Sales, Representatives, Sales Managers and Area Vice Presidents. He developed a regional, focused Vertical Market Strategy and created and developed strategy for a Project Acquisition Team. He also developed an online training platform for training remote employees and sales representatives, provided coaching to direct reports, and facilitated mergers and acquisitions of sales channels.

A graduate of Clarkson University in New York, English studied interdisciplinary engineering and management to earn a degree in Industrial Distribution. He attributes his early leadership skills to attaining the rank of Eagle Scout in the Boy Scouts of America; he has honed those skills throughout his time managing direct and representative salesforces. He resides in Charlotte, North Carolina.

Charbonneau Industries & Flowserve Supplying Phillips 66

Phillips 66 has awarded a contract to Ci for additional mainline valves for their CJG Ethane Pipeline System. The system connects the growing P66 storage complex at Clemens Caverns to a new JV petrochemical complex near Gregory, TX. Ci OEM Pipeline Platform Partner, Flowserve, will provide 15 pieces of 16” 900 class Valvair API-6D slab gates valves with Limitorite electric actuators for this project. Ci will continue to provide project management, V&As mount, set, extended testing, coating, logistics and storage as necessary for the P66 project.

Richards Industrials Names Tara Baker Regional Sales Manager

Richards Industrials has announced that Tara Baker has been promoted to the position of Regional Sales Manager. Tara was previously a Client Consultant at Richards for the past seven years.

Tara will spend the next two months attending the Richards RSM Training Program, after which she will be assigned a territory within the US. Her role will be to build, develop and lead a team of sales representatives focused on driving growth for our products lines including Jordan Valve, Stiff Valve and LowFlow Valve.

DeZURIK Awarded Dual Training Grant

Recently DeZURIK received a Dual Training Pipeline grant of USD$36,000 to provide tuition support for their machinists. DeZURIK’s employees will receive training and degrees through collaboration with the St. Cloud Technical and Community College for the 2020 school year. The GSDC first introduced the Grant Program in 2018. This is the third Dual-Training grant that DeZURIK has received.

The Minnesota Dual Training PIPELINE (Private Investment, Public Education, Labor and Industry Experience) Grant Program supports industries in advanced manufacturing, agriculture, health care services and information technology. The program works with employers to change the conversation from “How do we give workers the skills we need?” to “How do we give workers the skills we need?”

Ashcroft & Setpoint Integrated Solutions Partnership

Setpoint Integrated Solutions and Ashcroft Inc. have continued to build on their partnership by expanding the existing Authorized Stocking Distributor agreement to include three new Texas locations for the sale of Ashcroft Inc’s line of Pressure and Temperature Instruments.

Setpoint I.S. and Ashcroft Inc’s partnership dates back over 60 years, and Setpoint I.S. continues to be the legacy representative in the East Texas, Louisiana, Mississippi, Alabama and Florida panhandle territories.

The expansion includes three new Setpoint I.S. Texas locations: La Porte, Richwood and Corpus Christi. These distributing facilities service the Houston, San Antonio, Austin and Corpus Christi areas for the sale of the Ashcroft Inc Pressure and Temperature Instruments.
A Time to Learn
An Interview with Jonathan Whitlock – Instrumentation Engineer

Jonathan Whitlock was an instrumentation engineer for over four decades. For the majority of his career, he volunteered to share his knowledge with engineering students and now teaches full time at San Jacinto College. Valve World Americas had the opportunity to sit down with Whitlock to talk about his vast industry knowledge, his goals as a teacher, and what he hopes for the future of the industry.

By KCI Editorial

Working in the instrumentation industry for 42 years has given Whitlock a wealth of knowledge and experience. He has spent time on projects in both upstream and downstream sectors; in pipeline systems and in chemical plants; and has worked with everything from control valves and temperature devices, to distributed control systems (DCS) and programmable logic controllers (PLC). While working in instrumentation and control systems has been Whitlock’s primary focus, he has always had a passion for power distribution.

“I like dealing with high-voltage applications, while also working on the instrumentation side of it,” he relayed. “I have pretty much worked with everything electrical-related. I specialize in all aspects of instrumentation and I know a lot about valves because I have done design engineering and management for all different types.”

Some of his principal projects include:
- Crude oil rail unloading;
- Safety instrumented systems (SIS);
- Refinery expansions installation of vessel, heaters, boilers, pumps and valves;
- Firewater protection systems;
- Barge loading dock facility installations;
- Power distribution system upgrades;
- Flare gas recovery systems;
- Pressure Relief Valve (PSV) 3% compliance and remediation;
- Steam system improvements;
- Environmental compliance projects;
- Solar power systems;
- Microwave communication systems;
- Uninterruptible power supply or source (UPS) systems;
- Diesel and natural power generation packages;
- Navigational lighting systems;
- Pipeline remote control automation and monitoring;
- Compressor control systems;
- and boiler management systems (BMS).

The multi-faceted nature of his role has simultaneously provided him with the opportunity to engage with a wide range of industry professionals. “One of the major issues I faced in the early days of my career was the inability to find good technicians coming out of the local colleges. So, I decided to train my own!” explained Whitlock. “I was a volunteer teacher for about 25 years. I basically took kids off the street and made instrumentation technicians out of them.”

This is what first brought Whitlock into professional teaching. As he took on more and more young technicians, he realized that he truly enjoyed the opportunity to share his experience with those just entering the industry. “I retired from the instrumentation industry in 2019, and my intention was to take a break from work, go fishing, and relax. Suddenly, I was offered a teaching position at San Jacinto College, and they wanted me to start immediately. So, I did.”
Defining Instrumentation Engineering

The role of an instrumentation engineer varies greatly depending on which processes and equipment the engineer is engaged with. “My task as an instrumentation engineer was to arrive after the process equipment had been installed – so the valves, hoses, pumps and motors, and monitor and control the system through these devices, install the instrumentation and controllers (distributed control system (DCS), programmable logic controllers (PLCs), and standalone controllers) needed to get the process to worked as designed. If you simply install that equipment without anything else, they will not work,” said Whitlock.

Similar to the process of installing an engine into a car: if you do not connect the install instrumentation and a computer, the car will not go anywhere. The engine needs to be connected to the sensors, switches, the output control, and monitoring devices to get a fully functional piece of equipment.

All instrumentation needs to be tied into a computer, such as a DCS, PLC, or any computer based monitoring and control systems. All process requirements, such as temperature and pressure, are plugged into the computer, so the system will send a signal and control those units. “We manage, install, and design,” said Whitlock. “You can manually operate some of the systems, but even manual devices need some type of instrumentation support. A control valve will need the actuator, an air supply, and it needs to be calibrated properly. Ultimately, instrumentation engineers are necessary people. Without instrumentation, you will not be able to operate properly.”

Process Equipment

Vessels, valves, pipe, pumps, compressors and hoses are crucial to a process’ ability to function and produce salable products. Maintaining the instrumentation that monitor and control the critical process equipment is essential to the role of an instrumentation engineer. “The biggest cause of failures I have seen with valves is actually inadequate documentation. Gathering the proper data, analyzing it, and documenting really helps,” said Whitlock. “If you track how many miles you put on your car after each time you fill your gas tank from empty, and you see the number miles per tank getting lower and lower between each trip to the gas station, you know that your car is not performing at its best. By tracking and analyzing that data, you can tell your car is not performing well before a mechanic will tell you the same thing. The same goes for valves,” he continued.

“We stress to students that they need to learn how to analyze it, and in the end, it will prevent a lot of avoidable equipment stress.” This concept is commonly known as predictive maintenance.

The Joys of the Job

Whitlock considers programmable logic controllers (PLCs) to be the most exciting and the most challenging aspects of the instrumentation role. “The PLC is nothing more than a black box that you can start programming for your equipment. You program it with certain language, and it will take inputs and produce outputs. One of the most exciting things is being able to take the ideas from someone’s head and program it into the PLC,” he explained.

“Being an instrumentation engineer can be extremely challenging at times. “There is no time for trial and error, and you have to do the job correctly with a lot of other dynamic factors in front of you. You have to be focused on maintaining project scope and costs, you must work with the customer, and the other field support personnel, and you have to train a lot of people to use the instrumentation technologies properly.”

Teaching the Next Engineers

Whitlock now teaches at San Jacinto College for the Instrumentation Program. “I had not planned on taking another position so quickly, but when you are called, you go where you are needed,” he said.

The Instrumentation Program has been designed for students coming straight from high school, as well as industry professionals who want to advance their skills. “Students need to have a basic level of understanding in math and science, specifically algebra and physics. We give them all the tools of the trade to maintain and calibrate equipment, but the first step is to understand each device. We teach them about temperature, pressure, and flow devices, among others,” Whitlock relayed. “The second step is to interconnect these devices in the system and learn how to maintain them. We use special tools and computers, and teach the students how they would put them onto equipment and how they would calibrate them.”

Students learn what kind of signals will be put out of the devices, as well as maintenance and installation procedures. The next step for the students is learning how to troubleshoot problems. “Any technician in the field needs to know how to troubleshoot and keep things running. We take the students through a regimented, very strenuous, process of troubleshooting various devices that are found in the process industry. If they mess up, everything is okay—it is better to mess up in the class than out in the field. We give them scenarios, the teachers go to mess up the equipment, and we tell the students to figure it out and fix it.”
To Whitlock, hands-on learning and training is an absolute must. He enjoys being able to get out of his chair and move his class to a lab to demonstrate what he is teaching. "There are so many engineers that have come into the industry not having touched the equipment during their years in school. I do not think that is a logical way to learn. You need to get your hands dirty when you still have your teachers as a resource, and then you can go out into the field and be ready for work."

“We want to make the students valuable assets for when they graduate,” admitted Whitlock. “Typically, when engineers come out of school, there is up to two years of training on the job before they are comfortable in their roles. We want to prepare them properly, to cut down that extra training time.” A lot of the teachers who work alongside Whitlock are engineers who are also retired or still working in the industry. “Our combined experiences can get the students to job-ready status by the time they are done here.”

**Looking to the Future**

When Whitlock first entered the industry, he was thrown into the field without a lot of experience. “I gained the experience in the field, but I would recommend something a little different for new engineers,” he said. “Gaining field experience while learning from lectures, textbooks, and the lab experiences in school, is a more all-encompassing way to become proficient at your job. Installing and maintaining instrumentation equipment should become second nature and a natural response.

“Any technician in the field needs to know how to troubleshoot and keep things running. We take the students through a regimented, very strenuous, process of troubleshooting various devices that are found in the process industry.”

Even if an engineer does not perform a specific task for years in the field, they should have it in the back of their minds should a problem arise. “I tell my students to practice what they learn every two weeks until it becomes part of who they are.”

Whitlock knows that the instrumentation professions will be around forever. “Schools mainly focus on the process industries, such as oil and gas, and chemical, but instrumentation is instrumentation. The same practices we use in the process industries can be found on lab equipment in a hospital, auto computer diagnostic, traffic light control systems, HVAC system control, any system with end devices feeding a processor/computer generating outputs – it is all the same technology,” he said. “As the oil and gas industry starts to diversify into renewable fuels, more solar and wind power, we have been taking the necessary steps to ensure that the instrumentation will be ready. It is just a matter of making the decision to change and being prepared for it.”
ACKNOWLEDGE – What is Acceptable in Emissions Management

Fugitive Emissions are emissions of gases and/or vapors due to an unanticipated leak from pressurized equipment such as valves, pumps, compressors typical in a chemical, petrochemical, LNG plant or refinery. Emissions from refineries and chemical/petrochemical plants can be broadly referred to as Volatile Organic Compounds (VOCs) or Hazardous Air Pollutants (HAPs) emitting in the atmosphere in plant applications.

Knowing how to select valves that will meet or exceed volatile organic compound fugitive emission limits is critical as the costs are exorbitantly high if an operator fails to meet the requirements. The most common industry codes and practices on emissions are:

1. ISO 15848-1 and ISO 15848-2, “Industrials valves – Measurement, test and qualification procedures for fugitive emissions”;

The outlined test conditions and parameters are listed in Figure 2. While the standards noted in Figure 2 offer a solid guideline, the community has hesitated to apply them across all businesses. While the change in the Environmental Protection Agency’s (EPA) policy is in review, business is as usual in the rest of the world, where Helium is commonly used in testing.

- The most significant measures of emissions are, leakage thresholds for Methane in parts per million by volume (ppmv) and leakage classes in Methane (AM, BM, CM);
- Leak rate at the stem seal is expressed in mbars-l per mm stem diameter;
- Flushing method is replaced by accumulation or suck through method to measure leak rate from stem seal with Helium (Annex A);
- Leakage is expressed in ppmv with methane; leakage with methane is measured by sniffing;
- For tightness Class AH, leak rate: 1,78·10⁻⁷ mbar·l·s⁻¹·mm⁻¹ (10⁻⁵ mg·s⁻¹·mm⁻¹);
- The appropriate leak rate is given for Classes BH and CH;
- Addition of Table 3 which gives tightness classes for stem (or shaft) seals with methane;
- There is no correlation intended between the tightness classes when the test fluid is helium (Classes AH, BH, CH) and when the test fluid is methane (Classes AM, BM, CM);
- Modification of the number of mechanical cycles for isolating valves.

With regulation requirements, users and inspectors are imposing fines when necessary. Valves are limited to API 602 forged steel valves (valves less than 2 inches). There are no standards to develop mandatory requirements on API 622, API 624, API 641 & ISO 15848 Part 1&2, such as maximum stem-to-seal tolerance allowance (finishing), criteria on leakage rates, maximum temperatures, minimum temperatures, leakage class, cycles, etc. In fugitive emission testing, the braided packing has been successful, which is cost effective for retrofitting existing and stock valves. Braided packing can be installed during shutdown or replaced during a valve refurbishment program.

These packings have been in use since the 1990s. Typically fugitive emission performance was good at 200°C, until longer test periods at higher temperatures resulted in the binders (chemicals used in producing packings) evaporating. Braided technology has improved since then, but binder disintegration above 200°C in a test period of six hours remains an issue. The use of braided packings for new valves is not commercially viable or practical compared to traditional die-formed graphite lantern rings. Alternative packings (specially engineered) for new valves are limited to API 602 forged steel valves (valves less than 2 inches). With regulation requirements, users

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>API 641 Ed 1st</th>
<th>API 641 Ed 2nd</th>
<th>API 624 Ed 1st</th>
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</thead>
<tbody>
<tr>
<td>Methane &lt;100 ppm</td>
<td>Snifing</td>
<td>BM Snifing</td>
<td>Flushing method replaced with Snifing method (Annex B)</td>
</tr>
<tr>
<td>Methane &gt;100 ppm</td>
<td>Snifing</td>
<td>BM Snifing</td>
<td>Flushing method replaced with Snifing method (Annex B)</td>
</tr>
</tbody>
</table>

*For Body seal, sniffing method remains the same for both helium and methane in ISO 15848 with the allowable as <50 ppmv.

**DIFFERENCE IN TYPE TEST METHODS**

<table>
<thead>
<tr>
<th>Test Medium</th>
<th>API 641 Ed 1st</th>
<th>API 641 Ed 2nd</th>
<th>API 641 Ed 1st</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helium</td>
<td>No Helium equivalent leakage</td>
<td>AH Vacuum</td>
<td>BM Vacuum</td>
</tr>
<tr>
<td>Methane</td>
<td>&lt;100 ppm</td>
<td>Snifing</td>
<td>BM Snifing</td>
</tr>
</tbody>
</table>

API 624, API 641 & ISO 15848 Part 1&2, such as maximum stem-to-seal tolerance allowance (finishing), criteria on leakage rates, maximum temperatures, minimum temperatures, leakage class, cycles, etc. In fugitive emission testing, the braided packing has been successful, which is cost effective for retrofitting existing and stock valves. Braided packing can be installed during shutdown or replaced during a valve refurbishment program.

These packings have been in use since the 1990s. Typically fugitive emission performance was good at 200°C, until longer test periods at higher temperatures resulted in the binders (chemicals used in producing packings) evaporating. Braided technology has improved since then, but binder disintegration above 200°C in a test period of six hours remains an issue. The use of braided packings for new valves is not commercially viable or practical compared to traditional die-formed graphite lantern rings. Alternative packings (specially engineered) for new valves are limited to API 602 forged steel valves (valves less than 2 inches). With regulation requirements, users
must now pay careful attention to the costs of compliance. For example, an engineered solution, such as special braided packing, is about 25% more expensive than traditional packing. However, these costs can be offset by and should be considered in the light of:

- Lifecycle costs;
- Maintenance, shutdown and reliability costs;
- Manpower required;
- Meeting corporate safety and regulations; and
- Value of industry status as green and a clean producer.

Because the requirements may be interpreted differently depending on the end users’ locations, the industry is still in partial acceptance of fugitive emission requirements and the use of braided packings for controlling these emissions.

The Future

In understanding and applying what is best requirements industry should meet towards fugitive emissions regulations. Given the available current practices and regulations from the EPA, API, ISO, ISA, NACE, ASME, and many other organizations. End users are consistent in the research and improvement on current practices, including testing and approvals.

DIFFERENCE IN TIGHTNESS CLASS

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</table>

Note: All values are provided with our trademarked Bonney Forge quick seal stem packing system which is CLLT verified independent third-party inspections.

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- API 594
- API 600
- AML approved
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- API 600
- API 624
- API 804
- MSS-SP-134

REFERENCES
The tables and charts in this article are courtesy of manufacturers, fugitive emission testing laboratories and industry colleagues where the author participates.

DIFFERENCE IN ENDURANCE CLASS

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<th>Temperature (°C)</th>
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Image Courtesy of Zwick Valves USA.

Conclusion

Fugitive emissions are chemicals in physical form that can leak unanticipated within an installation. Valves account for more than 51% of fugitive emissions, and greenhouse gases (GHGs) are part of this. Leak screening should be completed on accessible components using a portable organic vapor analyzer in accordance with U.S. EPA Method 21 or using alternate methods that provide an equivalent result.

UNRIVALED VALUE, PUTS US AHEAD OF THE REST

There is no change in leakage from body seals between Helium and Methane (<50 ppmv).

There is no change in leakage for controlling these emissions.

Partial acceptance of fugitive emissions regulations is interpreted differently depending on the end users. End users are consistent in the recent acceptance of fugitive emissions requirements and the use of braided packings for controlling these emissions.

Information above has been proven in laboratory by industry and shared with industry to improve upon our current and future practices on emissions.

ABOUT THE AUTHOR

Gobind Khiani, M.Eng., P.Eng. has served in engineering management roles for both operating and EPL companies and has received Fellowship in Engineering. He has a bachelor’s degree from the University of Pune in India and a Master of Engineering from the University of Calgary in Alberta, Canada. He is the past chairman of Calgary Branch Executive Committee at the Association of Professional Engineers and Geoscientists of Alberta and Valve Users Group. Currently he is Secretary of CPGCE, Vice Chairman of International Standards Organization, Volunteer at YPAC, GPS, API, PRCI, ASME, ESD and NACE representing Canada.

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Creating a Robust Maintenance Strategy
An Interview with Joe Anderson – Partner

With a quarter of a century of experience building reliability and maintenance programs for major food and pharmaceutical companies, Joe Anderson creates robust strategies that help manufacturers build programs and improve the life of key equipment and the productivity of operations.

By Michelle Segrest – Contributing Editor

Extending the life of crucial equipment assets like valves and pumps is critical when building an effective maintenance strategy for manufacturing facilities. According to expert maintenance and reliability consultant Joe Anderson, ranking the criticality of each asset is the first step.

“Having a robust strategy is critical,” said Anderson, a partner and Chief Operating Officer for the consulting firm Reliability X. “Whether you use the process of RCM (reliability centered maintenance) or FMEA (failure modes and effects analysis), ranking your assets based on criticality and defining strategies based on that information is the most important place to start.”

For example, manufacturers should use predictive maintenance technologies to monitor valves and pumps depending on the criticality rankings will help to keep production running and extend the life of each asset.

“Most plants have thousands of equipment assets,” Anderson explained. “To determine the criticality of each one, you must first develop a set of criteria based on whatever fits in your industry. For example, if it is manufacturing, you want to have established criteria based on the cost of downtime. You also need established criteria based on delivery to the customer, production, safety, quality, and in some cases the regulations or laws available that are based on risk. Establish the set of criteria then rank each individual asset based on its context. It takes a lot of time, but a robust strategy upfront mitigates failures in the future.”

Anderson has worked in maintenance and reliability in the food industry since he was 18 years old. His first job was with a beef-packing plant in Holcomb, Kansas. He worked with the wastewater and groundskeeping systems and, as a result, began to develop some expertise in lubrication. He eventually moved into refrigeration maintenance and worked closely with ammonia systems.

“As a green 18-year-old, you learn quickly that you do not really know anything,” he said. “So, I focused on really studying and trying to understand the system. I did that for a year, then transferred to floor maintenance.”

This is where he began to work closely with ammonia systems. Working with ammonia systems, Anderson realized that reliability is a major piece. He said, “I started in maintenance and through growth and evolution, I realized that reliability is a major piece. It encompasses an entire organization whereas maintenance is one specific piece of that.”

Anderson has been considered a ‘fixer’ in the industry. Throughout his career, organizations have hired him to create, implement, and drive new programs designed to improve reliability. He has driven successful programs at major companies like Smuckers, Schwan, and other Fortune 500 companies.

“I am more of a turnaround guy,” the 43-year-old father of two said. “Once I get a department in compliance, I hand it off and go.” This is why Anderson has committed his career to learning, coaching, and developing leaders.

“I want to be remembered as someone who cares about people,” Anderson said. “Becoming an effective leader is the ultimate story of my life. It is phenomenal to see someone I have coached reach their goals. I like it even more when it happens for them than when it happens for me. I know they could do it, and when they finally see it within themselves, well, it is just the greatest feeling, especially when I see they have improved on the systems that we put in place together.”

Dealing with culture change can be an obstacle when developing new maintenance and reliability programs, he said. “I try to get people to see that there is a whole other world of manufacturing besides the reactionary system,” Anderson explained. “I try to get quick wins to establish buy-in. This helps to get more people on your side. Training and investment in people can drive significant changes that are needed in order to see a turnaround. I spend a lot of
for Valves, Pumps & Other Equipment
and Chief Operating Officer, Reliability X

Establishing credibility is the first step in leadership developing, mentoring, and coaching, according to Anderson. “Showing people that you care about them and their success is motivating to them,” he said. “I do not have to go and find what triggers them to do things. If they know I care about them and respect them, they are willing to do anything that is needed. That is my goal—to get everyone to understand that I do care for them and their success, and I want to see them do better. I try to help them remove the obstacles that they normally perceive. Sometimes the obstacles are just perception.”

Anderson’s style of leadership development did not happen accidentally. He learned about developing leaders from his mentor, consultant John Ambrose. “Many people will tell you to fix the planned maintenance program (PM) and then try to launch a predictive maintenance program (PdM),” he explained. “I believe that PdM drives culture change when people see the value. For example, I can improve a PM on a gearbox for a mixer, but that is not going to help me to detect the condition of its current state. The mixer may have a USD $40,000 gearbox with a four-month lead time. If it fails, I am down for four months. So, fixing the PMs is not going to do anything for me.

Instead, if I perform an oil analysis to understand the condition of the equipment, it can be a very simple win. When you understand the condition, you reduce the risk. When people see that they start to understand. It takes time to develop effective best practices.

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“When I went back to school later in life, I decided to get a business degree rather than an engineering degree,” he said. “Years ago, when I left the beef-packing company, I went to work for a bakery. My maintenance experience at the beef-packing plant was very minimal, but I was really good at it. But I thought I was better than I was. I got into a smaller facility where I owned the store room. Then I was responsible for electrical, facilities, and all these things where at the beef plant everything was departmentalized. I realized I had to lead these guys who had to be multi-talented and multi-crafted. This is when I realized I cannot be an effective leader if I cannot train and develop my team. I was learning all the technical skills, but I could not justify some of the things I was doing because I did not understand the business.”

When trying to sell upper management on reliability programs and maintenance upgrades, the need to understand the business became even more apparent.

“I kept getting told no because I was not bringing anything to the table,” he said. “You cannot just walk in and say you need USD $50,000 to buy something. I was getting told no because I was not giving them a reason to say yes. Now that I understand how the business works, I can convert the language to make my case more effectively.”

Manufacturing During the Time of Coronavirus

Reliability is space and food and pharma, which are two necessities. Therefore, Anderson said his business has not been affected as much by the Coronavirus pandemic. However, he has solid advice for those whose businesses have been directly affected.

“Spend this time doing training,” Anderson advised. “Utilize the time that you have. If you are paying employees anyway, you should get some value. Value comes through knowledge, so as much training as possible is a good idea.”

He also recommends a clear strategy to return from a shutdown.

“It is so important to have an emergency plan,” he said. “People are paying the price now because they were not prepared. For example, you should have a lot of equipment that is connected to PLCs (programmable logic controllers). Do you have a strategy to perform maintenance on the batteries on the PLCs? What if the batteries are dead when you start back up? You may have to spend hours getting it system back up. Are the batteries good? What about your lubricators? Do you have single point lubrication or auto lubricators that may still be running when your system is not running? They may just be pumping grease everywhere. There are a lot of those types of things. At least once a week you should rotate that equipment and start it up and run it a little while, even if the plant is shutdown.”

Running equipment regularly is vital, he said.

“Make sure your equipment will start,” Anderson explained. “If you bring back 300 employees without starting up the equipment and working out the kinks first, you waste their time and your money. Use this time to get the people trained on guidelines and standard operating procedures. Be sure you understand the governmental guidelines for starting back up. Can you have the same amount of people on the line and still have social distancing? There really should be a strategic plan in place.”

Anderson also has solid advice for end users just entering the workforce.

“Continue to learn,” he said. “Self-inject yourself into the process to learn how everything works. Go out and run a line for a couple weeks and work with an operator. Do not just sit in the office.”

“I realized I cannot be an effective leader if I cannot train and develop my team. I was learning all the technical skills, but I could not justify some of the things I was doing because I did not understand the business.”
Passing valves is a well-known problem in oil, gas, and petrochemical industry, which imposes operational and maintenance challenges to operating facilities. Passing valves can highly have a cost impact in terms of production losses, energy losses, and the cost of repair.

By Fawaz A. AlSahan – Saudi Aramco

1. Introduction

Passing valves is the most common valves problem in oil, gas, and petrochemical industry, which imposes many challenges to operating facilities. Passing valves will result in one or more of the following:

- Safety hazard: an example is a passing emergency isolation valves on a fuel supply to process heater.
- Environmental impact: consider a passing control valve for a compressor instrument air system.
- Integrity impact: passing control valve for a compressor.
- Cost impact: passing valves can cause production losses and process interruption. There is also an additional cost for repairing passing valves.

The failure modes of valves can be categorized into: internal leakage through the seat (passing), external leakage, and blockage, or a pump.

2. Passing Control Valves

This section covers control valves internal leakage. Causes of internal leakage will be highlighted along with recommendations to eliminate or mitigate these causes. Testing requirements will be addressed with reference to governing industry standards.

2.1 Causes and Recommendations

- Corrosion will cause damage to both the valve body and internal parts. Corrosive components need to be known and then a proper material selection shall be made to prevent this problem.
- Soft seat, although has the advantage of providing tight shutoff, it can easily get damaged and then developing an excessive internal leakage. The direct solution to this problem is to avoid soft seats for globe valves, or using a rotary control valve with the flow direction not facing the soft seat.
- Actuator can be undersized and not capable to provide the required force meeting the required leakage class. As a result, internal leakage is developed.
- Misconception of tight shutoff provides a wrong assumption of zero internal leakage. Also, Class VI leakage class can sometimes develop higher internal leakage than Class V. An example is a high differential pressure gas application where Class V provides a better tight shutoff than Class VI.

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2.2 Internal Leakage Testing

Two common industry standards define the maximum seat leakage for control valves; IEC 60534-4 and ANSI/FCI 70-2. These standards define the internal leakage limits, test media, test pressure and test duration.

New and overhauled control valves shall be always tested for internal leakage before installing them. Test bench nowadays are computerized to speed up the test and provide automatic reports and the test result.

3. Passing Emergency Isolation Valves

This section discusses emergency isolation valves internal leakage. The major causes of internal leakage will be listed and recommendations will be provided to eliminate and mitigate these causes. Internal testing requirements with the maximum allowable limits are also covered in this section.

3.1 Causes and Recommendations

• Abrasive particulate erosion is a known reason for valve internal leakage, which can be prevented by a proper selection of the valve design while considering the proper flow (i.e., not facing the disc). Trim hardening is normally required in this case.

• Emergency isolation valves remain in one position for a long time during normal operation. Accumulation of solids or particles can prevent the valve to move and hence internal leakage can be developed. The right selection of valve design (triple eccentric butterfly or ball), the installation (vertical versus horizontal) and the flow direction (not facing the ball and disc) all play a major role in mitigating this problem.

• Corrosion will cause damage to both the valve body and internal parts. Corrosive components need to be known, and then a proper material selection shall be made to prevent this problem and prolong the life of the material.

• Actuators for emergency isolation valves are usually oversized to overcome unforeseen friction and provide effective response time. Normally a safety factor of 20% is added the required actuator forces.

3.2 Internal Leakage Testing

Two industry standards define the maximum expected seat leakage for emergency isolation valves; API 598 and ISO 5208. The standards define the internal leakage limits, test media and the test duration (Table 2).

4. Passing Pressure Relief Valves

The major causes of internal leakage for high and low pressure relief valves will be highlighted in this section. Recommendations will be provided to eliminate and mitigate internal leakage. Internal testing requirements with maximum allowable limits for every type of relief valve is covered in this section.

4.1 Low Pressure Relief Valves Passing - Causes and Recommendations

Low pressure relief valves (≤15 psig; normally for low pressure tanks) are covered by API 2000, ISO 28300 and ISO 4126-4. These valves can be either inbreathing, out breathing or a combination of both. Below are the main causes for low pressure relief valves internal leakage:

• Operating range of the pressure control system on a tank is very close to the low pressure relief valve set point. This cause is resolved by having enough gap between the tank normal operating pressure and the pressure relief valve set-point.

• Polymerization, auto-refrigerate, condensation or freezing can cause clogging and hence valves difficulties to reseat. Purging and/or heat-traced are normal treatments for these problems.

• Applying uneven bolts torque may cause seating misalignment and therefore the relief valve to leak internally. Even and proper torque per the valve manufacturer recommendations is the solution for this problem.

• Improper handling of pressure relief valve during removal, transportation, reservation, installation, and maintenance can easily impact the valve performance, and cause internal leakage right after commissioning. Following the manufacturer recommendations and best practices, such API RP 527 is recommended.

4.2 High Pressure Relief Valves Passing – Causes and Recommendations

High pressure relief valves are covered by API 520/526/527, ASME VIII-1, ASME VIII-2.
Main reasons for internal leakage in PTC 25 and ISO 4126. Below are the main reasons for internal leakage in PTC 25 and ISO 4126.

• Chattering is a common cause of spring release. Once chattering is clearly identified, it can be then eliminated.

• Spring relaxation (or loss of tension) due to the spring failure or a loose adjustment nut will cause a valve internal leakage.

• Fouling service (dust, rust, dirt, viscous, sticky, fluids which choke, polymerize, or become gums) is one cause of valves passing. To mitigate passing due to such service, purging mechanism is usually applied or heat-treating. Hardened or stellite seat/disc and knurled edge seat are also methods to resist damage. Soft seat could be also used to ensure the seal is seated.

• Pilot valve in dirty or condensing service can cause the relief valve to leak. Such problem is addressed by having a self-draining pilot tubing, applying a seal fluid/gas between the pilot and the sensing point or by installing a filter between the sensing point and the pilot. Filter, if used, shall be monitored for a blockage.

• Lift lever could be improperly positioned and cause the valve to continuously leak internally. Ensuring a correct position of the lever without tension before lining up the valve, will eliminate this problem.

• Installing the relief valve horizontally can highly cause internal leakage. Avoiding such installation will resolve this problem.

• Improper handling of pressure relief valve during removal, transportation, reservation, installation and maintenance can easily impact the valve performance, and cause internal leakage directly after commissioning. Following the manufacturer recommendations and best practices, such API RP 527 are recommended to properly address this issue.

• Oversized pressure relief valve can lead into internal leakage.

• Pressure relief valve bellows failure will cause the valve malfunctioning and internal passing. To eliminate this problem, the cause of the bellows failure needs first to be identified. The common causes of bellows failure are chattering, corrosion, excessive velocity, and extremely high backpressure (exceeding the bellows limit).

In addition to the previously highlighted solutions, there are three common ways to eliminate passing of high pressure relief valves. First and most effective solution is installing a rupture disc upstream the pressure relief valve. Another solution is utilizing soft seating instead of metal seat, which allows operating the valve up to 95% of set pressure without passing. Pilot valves, if suitable for the service, can also allow up to 98% of set pressure without passing.

**REFERENCES**

6. Fawaz A. AlSahan is the Chairman of the Saudi Aramco Instrumentation Standards Committee, and works as an Engineering Consultant with Saudi Aramco's Process and Control Systems Department. He is a voting member of the ISO Technical Committees 185 and 30, and a voting member of the Saudi Standards, metrology and Quality Organization (SASO) Technical Committee of Electrical Metrology. Fawaz has more than 22 years of experience in the design, technical support, and maintenance of Instrumentation and Automation Systems. Fawaz is a certified Engineering Consultant (CSE) and a Certified Automation Professional (ISA). Fawaz holds several patents and has published several papers. Fawaz also teaches several courses on process measurement, control valves, and pressure relief valves. Fawaz can be reached at Fawaz.sahan@aramco.com.
Valve Procurement From
An Interview with Allan Mabuti –

Allan Mabuti moved from his home country the Philippines to the United Arab Emirates (UAE). He joined McDermott and is working as a valve package engineer. This means he is responsible for the cradle to the grave in valve procurement.

By Lucien Joppen

Allan graduated with a bachelor degree of Science in Chemical Engineering at the University of the Philippines. His first job was with Score Pacific (the company’s name has changed into Callidus) which headquarters was in the Philippines. The company was focused on engineering, repair and maintenance of valves, mainly for the mining industry. “After five years with Score Pacific, I moved to Dubai to work at McDermott where I started as a Piping Engineer with a focus on valves. After nine years, I am still with McDermott still dealing with valves. Our office covers all MENA (Middle East and Northern Africa) Region, serving the oil and gas sector.”

Good Working Relationship
When asked about his move to the UAE, Allan explains it was mostly a matter of timing. “After my restriction bond with the government – as I needed to work with him again. When the company and destination were clear, I did some desk research regarding McDermott and life in UAE. The UAE, Dubai in particular, was and still is a growing and exciting community, compared with other nations in the region. As for McDermott, it is one of the largest EPC contractors for oil and gas with a solid reputation. In the end, however, the main reason for my move was the supervisor whom I had a good working relationship with.”

Tighter Deadlines
Allan holds a job as a Valve Package Engineer at McDermott. This is a fairly new title that was established as the company saw the need to address delays and issues with valves which in turn affect overall delivery to its clients. “I am responsible for valve procurement from the cradle to the grave. It starts with a valve MTO extraction from P&ID to the production of valve datasheets, then material requisition. After which I oversee the various offers until placing a purchase order (PO). After the PO, being the Valve Package Engineer, I am also responsible in the vendor’s execution of the PO, however mainly for the technical and delivery part. Financial transactions go through a different person. Therefore, my responsibility for ends only after successful commissioning of the plant. Any issues regarding the PO until to commissioning are still my responsibility. One example is the orientation between valve and actuator due to space constraints which are not foreseen during initial phase. We also experience failures during site testing and installation.”

Plant Visits
On the question if Allan’s work also entails plant visits and site inspections, he answers affirmative. “Regularly conduct manufacturing plant visits. Especially for critical valves we organize kick-off meetings in plants of our suppliers, also some design review and pre-inspection meetings. I also visit second tier suppliers such as forgemasters, machine and welding shops and so on, just to ensure that we are on schedule. Inspections take place mostly during FAT and the final release just to ensure everything will run smoothly. Inspections are the domain of our Quality Inspectors.”

Talking about a regular project, could Allan indicate how many and which types of valves are involved? “On a typical project we normally have a total of around 3,000 valves of which around 10% is actuated. But currently we are executing one big project – one of the biggest McDermott has been awarded so far – which has around 11,000 manual valves and roughly around 600 actuated valves.”

Talking about issues, could Allan mention some topics that high on his agenda at the moment? “At this stage, we are being challenged by the delivery requirement by our project planning. This is crucial especially for actuated valves where delivery depends on the actuators. Actuators are typically being supplied by a sub-supplier of the main valve manufacturer. If the actuator manufacturer misses its delivery to the valve manufacturer then we will expect a bit of delay in overall delivery. Hence to minimize such issues we try to split those long lead items and order well in advance. So mainly it is about timing. The previous trend in which there was a more relaxed attitude towards delivery deadlines has changed. Also, deadlines have been tightened: where once we had 52 weeks it is now 40 weeks.”
Quality Issues with Paint Jobs

“In general, I am interested in quality control/supply chain management issues. For example, the material quality and track-and-trace-solutions. Currently, we have additional inspection points on top of the minimum requirements by our end users. These inspections are based on our lessons learned in previous similar jobs we have executed. For example, we have experienced quality issues with paint jobs in which the paint was already chipping off in the first month after installation. It helps us to reduce quality issues in the end but then again the schedule will be extended as the more stops (for inspections, ed.) you give to a manufacturer the further the delivery will be. On the other hand, some vendors try to shorten delivery times by overpassing compromising on some quality points. I would say this issue at some point can never be forecasted, for example a material failing some test etcetera. In response to this, for critical valves, McDermott are delegating dedicated quality inspectors and field expeditors to ensure that the valves can be delivered on time and against the requested quality criteria.”

Compact Design

Finally, how does Allan perceive the drive in the oil and gas supply chain to drive innovation forward and to improve operational excellence?

“McDermott, being an EPC contractor, relies mainly on the vendors proposal. We are very accommodating and willing to discuss any innovation the vendors has to offer. So far I am impressed by the compact design of actuators. Catering mostly building offshore platforms, having a compact design helps us to reduce weight and overall footprint of the valve. There are manufacturers who have launched more compact models by reducing the spring chamber and the size of the springs while maintaining identical product characteristics (torque etc.). Unfortunately, currently not many end users are open to such solution as they are prone to use existing solutions they are accustomed to. At the end of the day we still need to ‘sell’ such innovations to our clients as a package.”

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Temporary Valve Replacement: Quick Fixes with Existing Inventory

Industrial plants are complex structures. Subtle changes in a raw material or a distracted employee adjusting a control slightly over its setting can have a cascading effect leading to failure. Regardless of how good your maintenance is, there will be moments when you will face a decision between shutting down the production (and wait for a proper replacement) or improvising a solution.

With the help of a Management of Change (MOC) process, sometimes it is possible to ‘save the day’ by replacing a faulty valve with a similar one from the inventory. How similar do they need to be? Well, that is the role a MOC process serves: to evaluate the differences and endorse or reject them. In this article we will explore some reasonings commonly applied to judge if the differences are acceptable.

Management of Change

Hasty adaptations or poorly considered valve replacements have led to terrible disasters in plants throughout the world. Accidents such as the one in Flixborough (U.K.), where 28 people were killed, prompted a rise in awareness regarding process safety and the need of a proper analysis before a change takes place. According to the AIChE(1), Management of Change is “...a process for evaluating and controlling modifications to facility design, operation, organization, or activities – prior to implementation – to make certain that no new hazards are introduced and that the risk of existing hazards to employees, the public, or the environment is not unknowingly increased.”

Every industrial plant must have a written procedure with the steps required for the evaluation of the merits of a proposed change. One of the most important steps in any procedure is the assembly of a review committee, composed of professionals of different disciplines. Some common disciplines involved in this phase are engineering (process, mechanical and electrical/instrumentation), operations, and health, safety and environmental. The many different points of view offer a potent safeguard against the old saying: “It Ain’t What You Don’t Know That Gets You Into Trouble. It’s What You Know for Sure That Just Ain’t So.” In other words, you do not know what you do not know.

Valve Examples

Before we proceed to some examples, a worthy caveat. The reasonings provided below are general guidelines and do not preclude the initiation of a proper MOC process. Every plant has its own particularities and it would be irresponsible to assume otherwise. The reasonings must be viewed only as a way to improve the chances of the alternative valve being accepted in a MOC review. The examples assume the alternative valve is from an approved supplier, was inspected to the full extent of the design code (and any additional requirements) and was kept well preserved in storage. Depending on the situation, the alternative may be either acceptable as a permanent or a temporary change with restricted duration.

a) Floating and Trunnion Ball Valves.

Having some idea about what caused the failure of the original valve is always helpful in locating suitable alternatives. For example, a manual trunnion ball valve (3/4” #1500) with socket weld ends was originally selected in order to provide lower torque operation in the field. But the lower torque comes with the cost of weighing more than the floating version. One of the welds in the original trunnion failed due to fatigue cracking, for small diameter lines are often overlooked when it comes to evaluating piping supports. A similar ball valve with floating design was found in stock and installed in the line. Despite the fear of unacceptable high operating torque, the field team reported no extra difficulty in opening the valve and what started as a temporary change became a permanent one for that particular location.

b) A ball valve in an actuated application failed.

The actuator was deemed operational and someone thought about adapting a manual ball valve in the old actuator.

Figure 1 – Example of manual operated ball valve with ISO 5211 mounting pad. Image courtesy of JD Valves.
A valve found in stock had almost the same technical description and even an ISO 5211 mounting pad. Due to the similarities, no MOC process was initiated because the operational team assumed it was a case of replacement in kind (a technical “like per like”). The new set-up was installed, but the actuator was incapable of operating the new valve, as it had metal-to-metal seats and higher friction between ball and seat (the original valve had resilient seats). The actuator had not enough power to break the valve open when the line was submitted to the normal differential pressure.

c) A manual bronze gate valve in a FRP (Fiberglass Reinforced Plastic) line was replaced by a stainless steel ball valve.

There was a MOC process, but the main concern was about how long the stainless steel valve would last in the application. Since the valves had the same face to face distance, no adaptation on the piping would be necessary. Everything was going well until the first time the valve was closed. The original gate valve needed several turns to be closed, but the ball valve was fitted with a lever and could be closed in one swift movement. The much faster closure process would have in the new application. The original valve had resilient seats. “With this information, the decision was made to not be fire-tested in the first place. During the MOC, a formal consultation to the Classification Society responsible for the platform was made. The reply was negative, based on the rules for that kind of vessel. The reason for using a fire tested valve on a seawater line was explained as a non-fire tested valve could leak during a fire and not only reduce the pressure available in the system, but also cause unintended flow diversion. This a good example of understanding why a piece of equipment is the way it is before attempting to change it.

When the only difference between an original valve and the alternative is in the non-metallic sealing, it is frequently hard to predict the behavior of the material will have in the new application. For ball valves, it may be possible to accept PEEK over PTFE (or vice-versa), depending on size, pressure and temperature. A formal consultation to the manufacturer of the original valve is always welcomed. Be especially aware when considering alternative valves for gas service. The O-rings in the alternative must be checked for the risk of rapid gas decompression damage (and consequential external leakage).

e) As a rule of thumb, ordinary ball valves should not be used for replacing globe control valves.

f) Ball valves with socket weld ends are commonly supplied with pup pieces. When evaluating replacements, it is worth noting that the valve may be exactly the same, but the pup pieces may have different schedules (wall thickness), which may render the valve unsuitable for the required pressure class.

g) A manual butterfly valve in a fire fighting system of an offshore platform needed replacement.

The original valve was an API 609 Category B valve with fire test requirement. A MOC process was initiated to evaluate the possibility of using an API 609 category A valve with no fire test certificate as a permanent replacement, for no one could see why the valve needed to be fire-tested in the first place. During the MOC, a formal consultation to the Classification Society responsible for the platform was made. The reply was negative, based on the rules for that kind of vessel. The reason for using a fire tested valve on a seawater line was explained as a non-fire tested valve could leak during a fire and not only reduce the pressure available in the system, but also cause unintended flow diversion. This a good example of understanding why a piece of equipment is the way it is before attempting to change it.

h) A new project was under construction and, near its completion, a critical duplex stainless steel valve had not been delivered.

Facing the pressure for commissioning and start-up, the manager initiated a MOC process to use a carbon steel valve as a temporary replacement. There was no doubt that the service fluid would destroy the valve functionality quickly, but the change was approved and implemented. The reasoning behind the decision was that the valve was not necessary for normal production. It was an isolation valve required only when doing maintenance on another equipment. Being a carbon steel valve, the corrosion process would be uniform, allowing for monitoring of the degradation of the valve by means of wall thickness measurement. The valve was indeed destroyed but the money it saved by permitting the start-up more than paid the cost.

i) A metering station in a FPSO (Floating Production Storage and Offloading) used double expanding plug valves (Control Seal and Twin Seal are examples of this valve) as on-off valves.

One of the valves was leaking and, as a result, was introducing error in the measurement. The valve was indeed destroyed but the money it saved by permitting the start-up more than paid the cost.

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[1] AIChe (American Institute of Chemical Engineers), Guidelines for the Management of Change for
Increasing **Valve Profits** in the U.S. Power Industry Despite the Pandemic

The market for valves for the U.S. power industry is being impacted by both the Coronavirus and wildfires. Due to the pandemic valve industry personnel are not able to communicate in person or attend power and valve exhibitions. Investment in valves by power industry purchasers will be down in 2020 due to postponement of both capital and repair projects.(1)

By Robert McIlvaine, President & Founder, The McIlvaine Company

Coal fired power plants have big investments in valves. Nuclear plants spend more per MW, but until recently there was much more generation by coal. As of July 2020 nuclear generation exceeded coal. Natural gas plants invest only half as much in valves per MW. In the first six months of 2020 coal generated 300,000 GWH versus 680,000 GWH for natural gas. Replacement valve expenditures by each of these three fuel types are nearly equal. Wind and solar plants use few valves.

The impact of the pandemic is impacting various segments differently.
• Fuel Type: There are no new coal plants and one nuclear project to be impacted. A large number of workers at the one nuclear plant under construction became infected. Some delays are being encountered in new gas turbine plants.

• Project Type: There is progressively decreasing impact for the following categories:
  - New companies will be the most impacted. Very few valves are sold to new power companies who have never purchased a valve. The market for valves for new power plants owned by existing operators is relatively small but is still impacted.
  - The market for replacement valves is larger and is being less impacted.
  - The market for repairs and service is large and the least impacted.

• Valve Type: In general there are high performance and general performance valves. With high performance valves the decision can be made to delay replacement and instead repair them. When general performance valves fail they are normally replaced rather than repaired. Therefore, there is greater impact on the high performance valves.

The wildfires in California and elsewhere are being blamed on climate change and specifically fossil fired power generation. This has the effect of delaying gas turbine plant projects. Valve companies are therefore facing several years where revenues from the power industry will not be increasing. However, profits can be increased.

Valve companies which adapt to the new ways to target prospects and communicate with them will have an advantage which can be converted to greater market shares, margins, and profits. Market research has been used as a peripheral tool by valve suppliers. Now it can be the foundation of a program successfully pursue the Most Profitable Market (MPM). There is already enough information available through media, associations, conferences and internet resources to determine the best prospects and then convince them that the supplier has a better product. Here is an approach based on customer knowledge and not sales leads.

Niney percent of U.S. power industry valves are purchased by less than 100 companies. Valve suppliers can easily identify the best prospects and even the processes used in each plant, allowing them to predict valve purchases. Some companies have preferred supplier lists. Often the companies preferred for one type of valve are not preferred for others. Market shares by type of valve and prospect can be constructed.

The Coronavirus and climate change present challenges to valve companies. Those that best meet these challenges can increase market shares, gross margins, and profits.

### Activity | Present Approach | MPM
---|---|---
Sales Initiation | Sales Leads and Reps | Predicted Prospects
Market Research | Peripheral | Foundation of Approach
Sales Promotion | Unstructured and Reactive | Structured and Proactive

REFERENCE:
1. Pumps: World Markets published by the McIlvaine Company

Robert McIlvaine is the CEO of the McIlvaine Company which publishes Industrial Valves: World Markets. He was a pollution control company executive prior to 1974 when he founded the present company. He oversees a staff of 30 people in the U.S. and China. http://www.mcilvainecompany.com

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The Preventative Maintenance Mindset: How to Quantify the True Cost of Inaction

Many of us have heard of lean initiatives such as predictive maintenance. Possibly in the past, you focused upon preventative maintenance, or even use to failure. Each of these have their good points and bad points. Today we are going to discuss the value of a predictive maintenance mindset and how to quantify the cost of inaction.

By John Laurens – Cross Company

There is little upfront cost for a mindset.
The beauty of this mindset is its generally free, and once adopted you can invest as much capital as you desire to achieve the results you require. Beginning with the mindset doesn’t require a grandiose amount of capital, it doesn’t necessitate a line stoppage, or even retraining your teams. It is simply adopting a new mindset, and attitude toward the maintenance of items, processes, machines, and even people.

What is a preventative maintenance mindset?
It is an overarching view of your facility as a whole, looking at it as one machine. Breaking that machine down in to its parts (valves, reactors, process tanks, dies, generators, kilns, gensets, departments, etc.) and looking at the time available per part for revenue generation annually.

This works across industries and factories around the world. We may all make different things, but we all manufacture the same thing: Profits, Revenue, Return on investment.

If you look at each of your parts you have an available amount of time equal to 24 hours a day, 7 days a week, 365 days a year, to utilize for revenue production. It represents your maximum output in regard to TIME – A Non-Renewable Resource.

Divide this maximum by your available hours and you get a dollar value per hour for each available hour of that process.

Now you have the key to understanding the value of action vs inaction.
How much does it actually cost me to not maintain this machine? What is the cost of downtime? Could a lack of maintenance on this USD $40 part cost me thousands? What if I lost this vessel for weeks?

It separates the noise from the value, and highlights where your revenue resides. Once found, maintaining access to those hours is the critical path because you can’t make any more time.

Here’s an example: Your process vessel can produce 6 batches a day and each of the batches are worth USD $5,000. If you extrapolate production for the entirety of the year and everything is perfect, with no valve failures, and you’re able to run your process smoothly and seamlessly throughout the year... This would equate to available Revenue Generation of USD $10,950,000. Divide this by the available hours (365 x 24 = 8,760) and this directly shows that an hour of this vessels up time is worth $1,250. Therefore, inaction has a cost. Waiting to failure has a cost. Not upgrading when we have the time has a cost. This actually allows you to look at the opportunity cost of not making a Preventative Maintenance decision.

In regard to rebuilding a ball valve, gate valve, or butterfly valve if it can save three hours of available production time for this vessel it’s immediate ROI is USD $3,750. A lot of repairs and upgrades can be justified with these economic examples and mindset.

Each part of your process needs to be working at optimal levels to allow for Maximum Revenues. One inherent benefit of this mindset is that safety becomes a natural byproduct of each action. In order to run your process well, it must be run safely, and your team must be trained how to properly operate your process. These are all mutually symbiotic relationships which improve your production systems and overall revenues.

Now that we understand what a preventative maintenance mindset is and we have it cemented in our culture let’s delve into leveraging this information for more revenue.

Examples.
1. Your process vessel continually vents nitrogen. You do not worry about it because nitrogen is cheap and “it just doesn’t matter” but you begin to notice that your product mix is off a bit. Your customers are getting a little different batch each shipment. Now it’s taking longer to fill the tank for production. Emptying for custody transfer / revenue realization has slowed as well. Review your uptime calculations per hour and overlay them with your filling / emptying times. This alone will “pay” for the repair of your Pressure and Vacuum Relief Valves with a FAST ROI. When you add in the savings of the Nitrogen costs, and improvements to product quality it is a no-brainer!

2. After an in-depth consultation with the customer, it was determined that we would like to purchase a new Emergency Relief Valve (ERV) and have the old one rebuilt as a spare. After reviewing the numbers it seems that this is a two for one special! The customer was able to receive a backup unit, as well as the new unit. This decreased downtime by a full two weeks. This provides the availability of the vessel’s operation 24 / 7 without leaking. With a previously calculated vessel value per hour of USD $3,356 this equates to USD $1,122,616 of available revenue generation. This more than covers the cost of your new ERV and rebuild at a fac-
tory authorized repair facility. This only shows the potentially lost revenue of an additional two weeks down. What if the vessel ruptured? What if it led to safety relief valve failures? True costs when including the opportunity cost of lost revenue can skyrocket.

3. A recent review of a cooling system identified 26 ball valves in need of repair or replacement. We found that rebuilding the units in our Valve Repair Center allowed them to be placed back in service three weeks earlier than if we bought new. However, for the next shutdown a new set would pull this down to an immediate turnover! The customer decided to buy all new valves as spares and repair the old ball valves for current use. With a one-year warranty this is comparable to a new unit but 50% of the cost. When we look at this situation with our overarching preventive maintenance mindset it allows us to see that this repair saves us not only the 50% cost of another set of Ball Valves as rotatable spares, but also the three weeks of system uptime. With a Vessel Value per hour of USD $298 this equates to USD $150,192 of available production revenue. Without the valve repair at a trusted service provider our machine would be down and unable to access those 504 production hours and subsequent revenues. This makes the case for a rebuild and spares set pretty open and shut!

Easy Actions
Find a valve vendor that is also a service provider you trust, with a team that provides a number of services to ensure that your equipment is operating at its best. The four services below are of critical value to your Predictive Maintenance Mindset in regard to Valves.

- Valve Repair – Only use highly trained valve specialists to inspect, repair, and test your valves, actuators, vacuum / pressure valves, and manifold assemblies to ensure proper function.
- Expert Consultation – Utilize a trusted vendors experience to streamline your predictive maintenance mindset by leveraging their work hours. Experienced technicians can help you to determine the right inspection cycle for your equipment, proper soft goods, flow rates, new technology, and dramatically accelerate troubleshooting.
- Tank Optimization Program – Find a Tank Optimization Program Provider. This is an in-depth review of all tank accessories on your site by a highly qualified technical expert. They will look at all aspects of your tank assembly, providing a comprehensive deep dive into the safety, maintenance, and operation of all the equipment on and around your tank. This helps to develop preventative maintenance programs for planning and scheduling. It also improves your batching capability by improving quality, reducing raw material usage and waste while complying with environmental regulations.
- Steam Survey – The best suppliers have access to industry leading steam survey expertise. Many are paid services but you could likely get a brief consultation for free to assess the value of a proper survey. These can highlight untold dollar amounts of waste.

ABOUT THE AUTHOR
John Laurens is a Senior Account Manager with The Cross Company, a nearly 75-year-old, 100% employee-owned, process powerhouse focused on improving manufacturing results for its customers. John utilizes his 21 years of manufacturing experience across several industry verticals, his education including a BS in Industrial Management focused on Manufacturing, and MBA. This provides a full scope view of the entire manufacturing process and highlights symptoms that a plant may showcase ahead of need. With a focus on continuous improvement balanced with ROI, and an unending eye on safety Mr. Laurens provides an interesting perspective on manufacturing across discrete and process manufacturing systems.
Projects & Tenders!

In this section you will find a listing of recent new Projects happening in the market & latest valve and valve related Tenders for the Americas.

United States-North Carolina: Overhaul Of Spindles Modulation Valves Bifilar Assemblies Hubs & Retention Plates
Description: Overhaul Of Spindles Modulation Valves Bifilar Assemblies Hubs & Retention Plates
Contact point: Lauren.S.Sueby@uscg.mil, +1-2533344099
Time limit for receipt of tenders or requests to participate: October 29, 2020
Language in which tenders or requests to participate may be drawn up: English

United States-Florida: Tenders Are Invited For Fire Hydrant Replacement (worcs 5)
Description: Tenders Are Invited For Fire Hydrant Replacement (worcs 5) (Water Main Valves)
Contact point: +1-813-272-6600
Time limit for receipt of tenders or requests to participate: October 26, 2020
Language in which tenders or requests to participate may be drawn up: English

United States-Ohio: Actuator Electro-mechanical Rotary
Description: Actuator Electro-mechanical Rotary
Contact point: Martha.Vermarten@dia.mil, +1-6146920646
Time limit for receipt of tenders or requests to participate: October 16, 2020
Language in which tenders or requests to participate may be drawn up: English

United States: Non-Collinear Valve Actuation System (MFS-TOPS-3)
Description: TECHNOLOGY TRANSFER OPPORTUNITY: Non-Collinear Valve Actuation System (MFS-TOPS-3)
Contact point: cory.efird@nasa.gov
Time limit for receipt of tenders or requests to participate: October 23, 2020
Language in which tenders or requests to participate may be drawn up: English

United States-Ohio: Vehicle Power Transmission Components Miscellaneous Vehicle Components And Engine Accessories
Description: Vehicle Power Transmission Components Miscellaneous Vehicle Components And Engine Accessories (Fluid Power Valves)
Contact point: thomas.king@dia.mil, +1-6146921748
Time limit for receipt of tenders or requests to participate: October 15, 2020
Language in which tenders or requests to participate may be drawn up: English

United States-Georgia: F. Wayne Hill Water Resources Center (wrc) Backwash Waste Pump Replacement
Description: F. Wayne Hill Water Resources Center (wrc) Backwash Waste Pump Replacement (Check, Isolation Valves)
Contact point: dana.garland@gwinnettcounty.com, +1-770-822-8720
Time limit for receipt of tenders or requests to participate: November 6, 2020
Language in which tenders or requests to participate may be drawn up: English

United States: Non-Collinear Valve Actuation System (MFS-TOPS-3)
Description: TECHNOLOGY TRANSFER OPPORTUNITY: Non-Collinear Valve Actuation System (MFS-TOPS-3)
Contact point: cory.efird@nasa.gov
Time limit for receipt of tenders or requests to participate: October 23, 2020
Language in which tenders or requests to participate may be drawn up: English

United States: Overhaul Of Spindles Modulation Valves Bifilar Assemblies Hubs & Retention Plates
Description: Overhaul Of Spindles Modulation Valves Bifilar Assemblies Hubs & Retention Plates
Contact point: Lauren.S.Sueby@uscg.mil, +1-2533344099
Time limit for receipt of tenders or requests to participate: October 29, 2020
Language in which tenders or requests to participate may be drawn up: English

United States: Bridges For Ships (Valves)
Description: Bridges For Ships (Valves)
Contact point: peter.masters@navy.mil
Time limit for receipt of tenders or requests to participate: November 17, 2020
Language in which tenders or requests to participate may be drawn up: English

Guatemala: Supply, Installation And Commissioning Of One Butterfly Valve
Description: Egge / C13-2020-0003 “supply, Installation And Commissioning Of One (1) Butterfly Valve For The Palm II Hydroelectric Plant”
Contact point: victor.sajquin@inde.gob.gt,
+502-2422-1800
Time limit for receipt of tenders or requests to participate: November 17, 2020
Language in which tenders or requests to participate may be drawn up: English

United States-Ohio: Actuator Electro-mechanical Rotary
Description: Actuator Electro-mechanical Rotary
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United States-Ohio: Vehicle Power Transmission Components Miscellaneous Vehicle Components And Engine Accessories
Description: Vehicle Power Transmission Components Miscellaneous Vehicle Components And Engine Accessories (Fluid Power Valves)
Contact point: thomas.king@dia.mil, +1-6146921748
Time limit for receipt of tenders or requests to participate: October 15, 2020
Language in which tenders or requests to participate may be drawn up: English

United States: Bridges For Ships (Valves)
Description: Bridges For Ships (Valves)
Contact point: peter.masters@navy.mil
Time limit for receipt of tenders or requests to participate: November 17, 2020
Language in which tenders or requests to participate may be drawn up: English

United States-North Carolina: Overhaul Of Spindles Modulation Valves Bifilar Assemblies Hubs & Retention Plates
Description: Overhaul Of Spindles Modulation Valves Bifilar Assemblies Hubs & Retention Plates
Contact point: Lauren.S.Sueby@uscg.mil, +1-2533344099
Time limit for receipt of tenders or requests to participate: October 29, 2020
Language in which tenders or requests to participate may be drawn up: English

United States: Overhaul Of Spindles Modulation Valves Bifilar Assemblies Hubs & Retention Plates
Description: Overhaul Of Spindles Modulation Valves Bifilar Assemblies Hubs & Retention Plates
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USDA to Invest USD$268M in Rural Water & Wastewater Infrastructure Improvements

The United States Department of Agriculture (USDA) is investing USD$268 million to modernize rural drinking water and wastewater infrastructure across 28 states.

“Upgrading the infrastructure that delivers safe drinking water and modern wastewater management facilities will improve public health and drive economic development in our small towns and cities,” Deputy Under Secretary for Rural Development Bette Brand said. “Under the leadership of President Trump and Agriculture Secretary Perdue, USDA is a strong partner with rural areas, because we know that when rural America thrives, all of America thrives.”

USDA is funding 76 projects through the Water and Waste Disposal Loan and Grant Program. These investments will help to improve rural water infrastructure for 267,000 residents. The investments that USDA announced are being made in Alaska, Arkansas, Colorado, Georgia, Iowa, Idaho, Illinois, Indiana, Kentucky, Massachusetts, Maryland, Maine, Michigan, Minnesota, Missouri, North Carolina, New Hampshire, New Jersey, New York, Ohio, Oklahoma, South Dakota, Tennessee, Texas, Utah, Virginia, Washington and West Virginia.

USDA Rural Development provides loans and grants to help expand economic opportunities and create jobs in rural areas. This assistance supports infrastructure improvements; business development; housing; community facilities such as schools, public safety and health care; and high-speed internet access in rural areas.

POWERED BY: To subscribe to the Projects & Tenders newsletter please contact Josh Gillen (j.gillen@kci-world.com). To submit a project or tender please contact Angelica Pajkovic (a.pajkovic@kci-world.com).
COVID-19 Lessons for Oil and Gas Manufacturers and Suppliers

The phrase ‘new normal’ is very popular at the moment. In the oil and gas (O&G) sector, we have had to adapt to many a new normal over the years. ‘Lower for longer’ was meant to be the new normal with prices in the USD 60-70/bbl range, before they went much lower than that. Now we have a different type of new normal – one fundamentally changing our working practices as we look to ward off the COVID-19 threat. However, though this time it really is different in many respects, one crucial thing remains the same: our sector is a tremendously inventive and a resilient one, and there is no reason to think we cannot weather this storm.

By Dan Munro – Owner & CEO, PJ Valves

Like many companies in the O&G sector, we at PJ Group are multinational, with various premises in place as far flung as the U.K., Italy, India and Singapore – all countries that have been affected differently at different times by the virus. We have learned a lot about how to respond by observing these differences – both for office-based work and manufacturing – and hopefully some of those observations can be useful to others in the industry.

The Factory Floor

However, we are not ultimately an information-based company. We are in the business of manufacturing and supplying valves. Perhaps it is theoretically possible to assemble a valve in the living room, but I doubt it is a practical solution. That means a great deal of our work is unavoidably physical and conducted on-site.

This meant tough decisions about which facilities must be closed and when they can be reopened. In our case, we were able to reopen our multi-turn factory at the beginning of June and our quarter turn factory received government permission to reopen on the 18th of May. We were able to do so thanks to our team’s efforts to redesign work patterns and layouts, and wholehearted embrace the WHO guidelines to make sure that we both satisfy our customers and keep our colleagues safe.

Indeed, there are many things you can do to minimize work required on the factory floor. For example, while final assembly and QA testing must be done on site, it is worth considering if other tasks leading to that stage can be moved to other parts of the supply chain, perhaps where there has been less of a COVID-19 impact. Likewise, we have worked closely with our supply chain to ensure we have failover back-ups, so if one of our suppliers or one of our facilities is locked down, there are ways to keep products flowing. Ultimately, it comes down to communication and partnership – which also applies to customers.

Customer Partnership

Different customers are affected by the virus in different ways. Some operators and EPCs are progressing much as normal, others are struggling with reduced staff numbers. This can affect project timings, and customers may not be able to take delivery at the dates previously agreed.

Deep engagement with the customer means you can work with them to understand when the site is available to receive goods, to work in reorienting orders, and to collaborate in other ways to keep projects on track. Just as communication extends through our own organization, it must extend down through our own supply chain and upwards to our customers.

However, for this to be successful, there needs to be an element of trust, which ultimately comes from a track record of partnership. Imagine that we are supplying a project that specifies a particular actuator, which is no longer available because of COVID-19. We can work with the customer to propose an alternative that meets the specifications and is available. However, if there is low trust, that change then gets bogged down in reapproval and checks that may mean the project is ultimately still delayed. If there is a pre-existing collaborative working relationship between our engineers and theirs, then that process is streamlined, and things stay on track.

Cometh the Hour, Cometh the Tech

Amidst all the difficulties, it is worth taking a moment to acknowledge that in some small respect the timing of this pandemic is fortunate (though of course it would be better to not have one at all). Had this occurred ten or even five years ago, the technology was not in place for this scale of mass remote working. Digitalization has been a lifeline during this period.

If we turn that reflection on its head, we can ask what we can do to be even better prepared for any future similar events; to build resilience into our industry. From this perspective, it is reassuring that the pre-existing efficiency trends towards digitalization and automation throughout the O&G sector has put us in a good position. It is not an easy time to look forwards when immediate survival is more pressing, but we should be encouraged that the right things to do now should also be the right things for the future of our industry.
George Gabriel has held many engineering roles throughout his decades of work, giving him invaluable experience and transferable skills. Valve World Americas had the opportunity to sit down with George Gabriel to talk about his experience with valves, pumps, boilers, and heat exchangers, and his thoughts on best-practices for engineering teams.

George Gabriel has spent almost 20 years as a process engineer and has learnt his experience to a wide variety of projects. He began his career as a production engineer and quickly moved into a lead project engineer role in the water treatment industry before finding his passion in large offshore oil and gas projects.

“The oil and gas industry has given me the most dynamic engineering position, in my opinion,” Gabriel related. “The oil and gas sector is primarily a function of sophisticated technologies and the needs of the general populous. As there is generally more action and new inventive technologies, I find it to be very interesting and engaging.”

George Gabriel spends his days managing teams of engineers in mega methanol and oil and gas facilities. “A mega facility is determined by the investment that goes into it, which also translates to output. Mega facilities cost over USD $1 trillion, and that roughly translates to putting out five thousand metric tons a day,” Gabriel explained.

Gabriel manages multidisciplinary engineering teams. He works with process engineers, electrical engineers, mechanical engineers, among others. “What I want is to have all engineering teams to be on the same page. They need to know what the requirements of the project are, they all need to know the schedule that they have to follow. You would be amazed at how many teams do not share this information with others. They only know the specific information they need, and they will not try to learn any more. I try to eliminate that,” said Gabriel. “My ultimate goal is to make sure each team understands how their jobs impact others—once they understand that, it is a much smoother workflow.” In order to properly question specific processes and possibly streamline others, it is crucial to ensure that each engineering discipline team is informed of other discipline process.

Gabriel starts each project with a large engineering team meeting. He covers timelines, requirements, the deliverables from each team, and he shows them 3D models of the project, and grant them access for their review. Gabriel continued, “Each engineering discipline team will talk through their roles, explaining their processes to everyone. In this way, the team get the whole picture. Not just one little snippet of it.” Through this process, Gabriel has had the opportunity to acquire extensive knowledge on boilers, pumps, valves and heat exchangers, throughout his time as a project engineering manager.

“My ultimate goal is to make sure each team understands how their jobs impact others—once they understand that, it is a much smoother workflow.”

The importance of a boiler in a mega project is often overlooked. The day the boilers are started at a facility is a momentous occasion. “The stakeholders will show up, the lead engineers, everyone. When the boilers get started it means the facility is nearing completion. When the boilers start, everything else is in place, and it can mark the beginning of the project completion,” stated Gabriel. Once the boilers have started, the pipes will be cleaned by the steam from the boilers in a process called ‘steam blows’. At this point, the plant is 90% ready and will be operational within a couple of months. “It is a big deal,” he continued. “One of the principle concerns with a boiler is the possibility of accumulated deposits. Those deposits are minerals from the water that are left during the boiling process. For gigantic boiler, these deposits become a real problem. As these deposits will eventually block the tubes, and it will cause maintenance problems for the boiler. Therefore, the water first needs to be treated.”

Most large facilities have their own water treatment processes. “Their capacity varies between 3 to 10 million gallons a day or even larger depending on the facility water consumption,” Gabriel relayed. The facility will take water from a nearby canal or river, separate from the city’s residential supply, and they treat the water. He continued, “After removing the suspended solids from the water they will do a process called demineralization. This is removing all the minerals from the water, which is done by ion exchange or reverse osmosis systems. Once minerals are removed you left with demineralized water (pure water no minerals), the demineralized water goes into further treatment to adjust the pH, then it can be distributed to the boiler system, in the boiler system the demineralized wa-
measurable Skillset

Gabriel - Technical Consultant

In the industrial world, ISBL stands for Inside Battery Limits. This is defined as all equipment and associated components that act upon the primary feed stream of a process. It refers to equipment and other components that are solely dedicated to a single process, whether or not the equipment is physically located within the geographical boundaries of the unit.

In contrast, OSBL stands for Outside Battery Limits. This is defined as utilities, common facilities, and other equipment and components that are not included in the ISBL definition. It instead refers to systems, equipment pieces and associated components, that support several units.

Gabriel has experience working on both the ISBL and OSBL sides of projects. “Working in ISBL, you need to know everything that is going on, so it is almost like you are working OSBL as well,” he explained.

An Interview with George Gabriel

Projects, including gate valves, globe

Gabriel works with many valves on his

process within a facility. “All valves are made specifically to the application it will be used in. The material it is made out of will depend on what fluid or gas will be passing through it when it is operational. The corrosivity, the pressure, the flow rate, and so much more has to be taken into consideration,” explained Gabriel.

Gabriel works with many valves on his projects, including gate valves, globe valves, knife valves, butterfly valves, and more. “In each valve category, there are many products have changed around. You can have regular butterfly valves but then there are also more robust butterfly valves. There are high performance valves, and those have three points of contact to provide more fluid control and more sufficient means of sealing instead of a single point of sealing valves,” he explained. The valves can also be manually operated, or remotely controlled by a motor, or pneumatic actuators depending on the design and the intended function. Also, valves can have multiple accessories, such as positioners and switches, to send a feed back to the control room so computers can take the proper action, and operators can identify the valve position and detect any malfunction remotely.

The biggest challenge that Gabriel faces when dealing with valves is in the delivery time. “There are so many valves involved with every project I work on, and there are variations in delivery time involved, so ensuring that the correct valve is delivered on time and in a timely manner can become complicated,” Gabriel explained. “This issue often stems from a lack of product capacity. When ordering regular valves, suppliers have them on the shelf and ready to go. But when we are ordering special valves from the supplier catalog, we must wait for manufacturing, delivery time, which can take up to 36 weeks sometimes. That could cause problems if the project has a rushed schedule.”

Final Thoughts

Gabriel believes that with today’s focus on renewable energy, and electric cars, the demand on oil & gas as an energy source will be reduced. Yet, the demand on it as raw material for petrochemical industries will increase, as the need for new materials will increase. “Look how many products have changed around. You can change from metallic to nonmetallic products,” he noted. “Always be open for new ideas, it may result in better design or extra savings, it also improves the teamwork environment. Always be open to new challenges, and never be afraid of making mistakes. With every challenge we gain new experience and with every mistake we learn and add new knowledge.”

Over George Gabriel’s many years in the engineering industries, he has gained valuable experience and built many transferable skills. From boilers and pumps, to valves, to heat exchangers, Gabriel is able to stay up to date with the progressive nature of the industries he works in and pass on that knowledge to his team. Whether he is working on the ISBL or the OSBL side of things, he will continue to expand the knowledge of the engineering teams he works with. “Once you get everyone working together and with a comfortable understanding of these different essential processes, you are set for the rest of the project,” he concluded.
Managing Aging Infrastructure

If you think about it, industrial plants and living organisms share at least two similarities: lifecycle and a complex design. Like a living thing, a plant is conceptualized at basic design, develop and grow through construction and is “born” in commissioning/startup. Then it “grows and ages” in operation and says goodbye to this world in shut down and decommissioning. An industrial plant is also complex, since it has many interdependent processes. When interacting with these complex systems, it is always possible that some minor change, perhaps unintended, or even unnoticed, may trigger cascading effects and other unforeseen consequences. As a decision may be made based on the information available today, it can be difficult to fathom the effects a decision will have 5, 10, or 30 years later.

A proper Asset Integrity Management (AIM) strategy must take these two similarities into consideration. Traditionally, a maintenance program begins before operation, with the task of preservation and inspection. For most of the lifecycle, the tasks in the maintenance program for new and old plants share many similarities. As time passes however, the maintenance tasks may need to adapt to the aging infrastructure and differences from previous phases of the lifecycle may appear.

What is Aging?

Industrial equipment does not age in the way that we are accustomed to thinking of the aging process. If considering a valve for example, a valve is purchased from a reputable manufacturer, with a solid design code like API 6D and often with additional quality requirements. As long as it is preserved properly, the time elapsed since it left the manufacturer has little meaning. Once it has been installed however, identical valves from the same supplier will age differently, depending on process conditions, occasional fluctuations, vibration, turnarounds, local atmospheric conditions, etc. Aging is not about how long ago your equipment was purchased or installed, but what it has undergone since. If during commissioning of a new plant, the elastomeric sealing of a valve was damaged by exposure to some chemical used for cleaning or conditioning the piping, then your brand new valve is already old, in the sense that it is has deteriorated and is no longer able to contain leakage as a new one. Conversely, an old valve may still be capable for fulfilling its duties with safety. Equipment with unknown histories or for which there is doubt must be treated as old, that is, with a chance of not being fit for purpose.

Aging is about degradation. After exposure to operational conditions, the chemical and mechanical properties of the materials used in any equipment will at best remain constant, but most probably degrade. Thus, the assumptions made during the design will no longer be valid; this can occur both gradually or instantaneously. This aging process can be seen with piping, vessels and ancillary structure such as pipe racks as well as valves. However well-specified, it is impossible to predict what process and surrounding conditions will be like ten years from now. The new conditions can adversely affect the equipment in ways not considered in the original specification.

Degradation may be caused by several mechanisms, acting isolated or in a combined manner. In fact, plants may have a combination of them in a specific location but not in others. A recent report made by the HSE1 states that the three most dangerous aging mechanisms are corrosion, fatigue and fatigue.

Recent research has shown that 50% of European major hazard “loss of containment” events arising from technical plant failures were primarily due to aging plant mechanisms such as erosion, corrosion and fatigue. These ‘aging’ events equate to an overall loss of 11 lives, 183 injuries and over 170Million € of economic loss. This demonstrates the significant extent and impact of aging plant related failures on safety and business performance.

Corrosion is a broad term that includes several distinct mechanisms of degradation. Atmospheric rust needs basically an exposed ferrous surface, air and moisture. It is a simple, uniform process and the rate of degradation can be fairly predicted. At the other extreme, there is phenomena like SCC (Stress Corrosion Cracking, see Figure 1) or HIC (Hydrogen Induced Cracking), for which specialists still debate over the exact atomic process that leads to failure. SCC and HIC are much harder to predict and notice than atmospheric corrosion (no uniform reduction of thickness) and may result in unexpected catastrophic failure. In between atmospheric corrosion and SCC/HIC there are several other forms of corrosion, such as: microporosity, carbon dioxide (sweet), crevices, under insulation, galvanic and pitting.

Erosion is a damage mechanism which differs from corrosion as it is physical rather than chemical process. Solid particles carried by the process fluid, or the process fluid itself, can impinge on the surface of piping, fittings or equipment and cause loss of material. Its effects may compound with corrosion, when erosion removes some protecting oxide layer and exposes the base metal to corrosion.

Fatigue occurs when a material is subjected to a cyclic loading and develops cracks that ultimately lead to failure, often catastrophic. There are many theories for explaining and predicting this aging mechanism, but a consensus has not been reached yet. Fatigue is commonly associated with vibration and repeated load condition in equipment like pumps and compressors. But it can also affect piping and structural elements like civil structure. The stress cycle for piping may originate in the flow conditions and wind may induce cycling in structures.
How to Deal with Aging?

A theoretical model often used to describe how failure rates change over time is the bathtub curve (see Figure 2). It predicts that failure rate rises during the initial phase of the equipment life-cycle due to factors such as manufacturing defects and bad commissioning. The rate is then lowered during normal operation only to rise again near the end of design life. This last rise is the result of the natural wear out of components, sometimes compounded from unknown interactions among them.

The model is not perfect, but it serves to illustrate that maintenance needs vary as the equipment ages and approaches its intended life span. Maintenance for aging plants is part of the more amenable scope of Asset Integrity Management (AIM), which is a structured program designed to assure adequate means and resources for keeping the integrity of an asset during its design life. AIM programs vary according to several factors, including industry, government regulations, company culture, etc. At the center all of the programs have the goal of developing clear quality procedures related to all the phases of a life-cycle: design, procurement, construction, commissioning, start-up, operations, and decommissioning, including support activities like MOC (Management of Change), maintenance, inspection, definition of control KPIs and subsequent monitoring.

AIM programs for aging plants have some specific challenges. These challenges include:

- Knowledge retention from senior employees. When employees retire, they take with them part of the plant’s history, which often contain subtleties not present in the formal records or, if present, difficult to retrieve. Many problems tend to repeat themselves and if proper care is not taken to train a new generation before they leave, there is the risk of “reinventing the wheel” many times over.

- Operational procedures may have to change. Practices allowed in earlier life may now stress the plant beyond safety. Repeated training is required for all operators to get used to the new procedures. This is particularly hard for senior operators as some tackle the new procedure with a mental attitude of “But I have been doing the other way all my life without problem!”

- Keep track of changes in the design codes used in the plant. Some old assumptions may no longer be permitted under the revised code. It is necessary to discover if the original design is outdated, but still valid, or if a previously unknown mechanism now requires review.

- Training to recognize aging mechanisms and their warning signs. Vibration in a new equipment may require immediate attention. In an old one, it may be normal and under the acceptable value. In a new equipment, a given corrosion rate may be high but acceptable for a short term. For an old equipment, that same rate may be unacceptable due to the accumulated reduction in wall thickness since operation began. Training for the operators need to address this issue or risk failure due to insufficient skill to discern between the “old abnormal” and the “new abnormal”.

- Review and adaptation of the original hazard identification process. Are the original assumptions still valid? Has any process modification invalidated them? What aging mechanisms were overlooked? The history of breakdowns, MOC (Management of Change), turnaround and accidents (both local and from similar plants) must feed this review.

- Inspection frequency must be updated, and some new techniques may be required to monitor the progress of damage. This is just one of the increases in maintenance cost that must be addressed by the higher management.

- Mergers and acquisitions involving old plants require the harmonization of different business cultures and AIM practices. This is already challenging enough, but if unreliable or incomplete documentation about maintenance and MOC is added to the mix, this a fertile ground for accidents to happen.

Final Thoughts

Plants age and as they approach the end of their design life, they require more attention and resources. Top management must appreciate this fact and act accordingly, or face dire consequences. Aging requires a business plan that considers budget increases for maintenance during a period when the plant’s output is normally past its peak.

The cost of maintaining or upgrading will keep rising until it reaches a point where it surpasses the financial capacity of the plant to sustain it. If no alternatives are found, then the moment has come to properly shutdown and adopt the procedures required in safety and environmental regulations to prevent spillsages and other accidents. For some plants, these regulations may require a decommissioning process, which is often costly and must be provided for with due antecedence.

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Uniting the Valve Community at Valve World Americas Expo & Conference 2021

Be part of the sixth biennial Valve World Americas Expo & Conference to take place on June 22nd and 23rd, 2021 at the George R. Brown Convention Center in Houston, TX. The dynamic and interactive event will give attendees the opportunity to network with the leading minds driving ahead innovation and excellence in the fields of valve manufacture, use and maintenance. Featuring an exhibition and a technical conference, the event will have something to offer for everyone, including manufacturers, service providers, EPCs and end users.

During the exhibition, manufacturers, suppliers and distributors will have the chance to showcase their latest products, technologies, services and capabilities, while simultaneously forming new business relationships and reaffirming old ones. The technical conference will feature experts from all aspects of the manufacture, specification and application of valves, who will focus on a wide range of topics impacting today's valve industry.

The Valve World Americas team is thrilled to announce the appointment of Dan DeVine, Valve Technology and Piping Materials Consultant - Corteva & Midland Engineering as Chairman for the 2021 Valve World Americas Conference. Dan has been heavily involved with the event since the beginning and his knowledge, expertise and immense experience in the industry will be great asset in assisting to put together an exciting and informative conference program this year.

Share Your Knowledge

The Valve World Americas team and Chairman encourage presentations to be made at the event on a wide variety of topics related to valves, actuators and the flow control industry. Workshops will be centered around one theme or topic with speakers giving presentations related to that theme, sharing their knowledge and expertise with conference attendees. Following the presentations, attendees will be invited to ask questions and audience interaction is always encouraged to help spark debate, discussions and the free exchange of ideas and experiences, which are all integral components of the conference experience.

If you would like to make a presentation during the conference, please submit a 300-500 word abstract outlining the material you would like to cover to Sarah Bradley (s.brady@kci-world.com) and Catarina Muia (c.muiia@kci-world.com) by December 1st, 2021 to be reviewed by the Chairman and Steering Committee.

Submit Your Abstract Today!
When submitting an abstract remember to:

- Include your name
- Include your job function/title
- Include your company name
- Include full contact information
- Include e-mail address
- Include title of the paper
- Indicate a general topic/theme that you believe would best relate to your presentation

The following selection criteria will apply:
- Quality of the content
- Focus on technical/ non-commercial content
- Informativeness to a wide audience
- Relevance to conference subject matter

Email your abstract to s.brady@kci-world.com and c.muiia@kci-world.com.

A Message from the Chairman

I am honored and excited to be the Chairman of Valve World Americas Expo & Conference 2021, and look forward to another fantastic event, where attendees can enjoy the networking, camaraderie, and outstanding technical presentations that accompany Valve World. This is a wonderful event for the valve industry, showcasing new inventions, practical solutions, productivity enhancements, and potential cost savings opportunities.

The first time I attended the Valve World Americas event was in 2013. I was introduced to the complexity of this technology through regulatory compliance for Leak Detection and Repair (LDAR) of fugitive emissions. Getting involved and participating in these conferences has been a very rewarding experience.

Witnessing the transformation of packaging products and changing stall sealing performance, seeing the creation of new testing standards, along with other improvements, were often at the forefront of discussions in previous years at Valve World. One of my favorite career highlights.

Certainly, there are other equally important aspects too: seat sealing capabilities, operability, long term reliability and integrity, availability of cost-effective valves to meet a variety of pressure-temperature conditions, to name a few, that are vital to successful production. I cannot think of a better place to learn for the first time or to continue increasing your technical depth than Valve World. Either through attending a multitude of technical presentations, or meeting with the valve and packaging manufacturers, or companies that provide supply chain, automation, repair and reconditioning, drill and tap services, and various other vendors.

This event has something to offer to everyone, no matter what industry you work in, including utilities, oil and gas, pharmaceutical, commodity and specialty chemicals, and agriculture. I am confident that all attendees will discover areas of improvement and learn about new innovations that are beneficial.

Whether it is savings on valve costs, improving delivery times, proper valve maintenance, or partnering with other manufacturers and end users, I think you will find your attendance will be time well spent, personally satisfying, and can bring profitability to your company or business.

I look forward to seeing everyone there.

Regards,
Dan DeVine

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